



az-204.vce

AZ-204

ExamCollection

Score: 800/1000
Version: n/A
Time Limit: 0 Minutes

Develop Azure compute solutions (30 questions)

Case Study (2 questions)

Case study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

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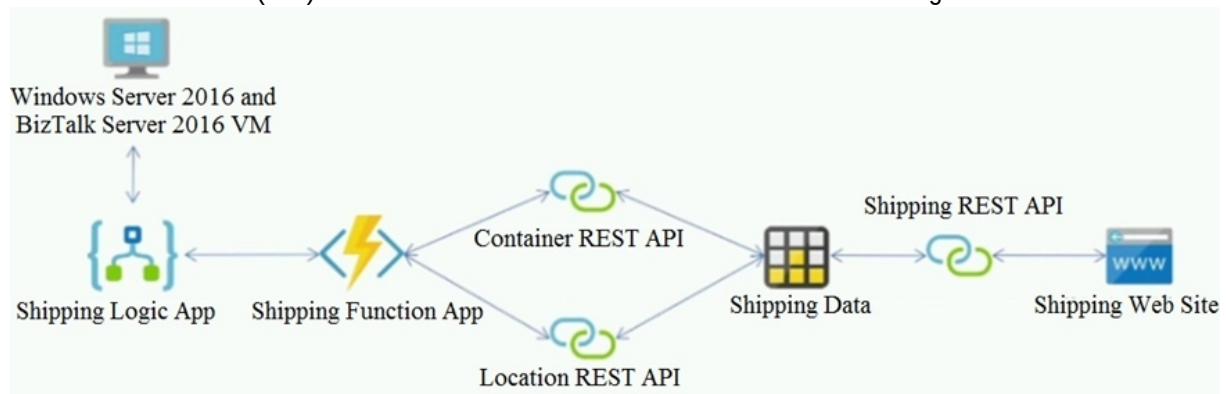
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Current environment

Windows Server 2016 virtual machine

This virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:



Requirements

Shipping Logic app

The Shipping Logic app must meet the following requirements:

- Support the ocean transport and inland transport workflows by using a Logic App.
- Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.
- Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
- Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.

Shipping Function app

Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).

REST APIs

The REST API's that support the solution must meet the following requirements:

- Secure resources to the corporate VNet.
- Allow deployment to a testing location within Azure while not incurring additional costs.
- Automatically scale to double capacity during peak shipping times while not causing application downtime.
- Minimize costs when selecting an Azure payment model.

Shipping data

Data migration from on-premises to Azure must minimize costs and downtime.

Shipping website

Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.

Issues

Windows Server 2016 VM

The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.

Shipping website and REST APIs

The following error message displays while you are testing the website:

```
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-
```

Control-Allow-Origin' header is present on the requested resource. Origin 'http://test.wideworldimporters.com/' is therefore not allowed access.

- Ocean Transport – This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.
- Inland Transport – This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.

The VM supports the following REST API calls:

- Container API – This API provides container information including weight, contents, and other attributes.
- Location API – This API provides location information regarding shipping ports of call and trucking stops.
- Shipping REST API – This API provides shipping information for use and display on the shipping website.

Shipping Data

The application uses MongoDB JSON document storage database for all container and transport information.

Shipping Web Site

The site displays shipping container tracking information and container contents. The site is located at <http://shipping.wideworldimporters.com/>

Proposed solution

The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard_D16s_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations. You create a Standard_D16s_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:

Question 1

HOTSPOT

You need to configure Azure CDN for the Shipping web site.

Which configuration options should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Option	Value
Tier	▼ Standard Premium
Profile	▼ Akamai Microsoft
Optimization	▼ general web delivery large file download dynamic site acceleration video-on-demand media streaming

Question 2

HOTSPOT

You need to correct the VM issues.

Which tools should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Issue	Tool
Backup and Restore	Azure Site Recovery Azure Backup Azure Data Box Azure Migrate
Performance	Azure Network Watcher Azure Traffic Manager ExpressRoute Accelerated Networking

Case Study (1 questions)

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Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

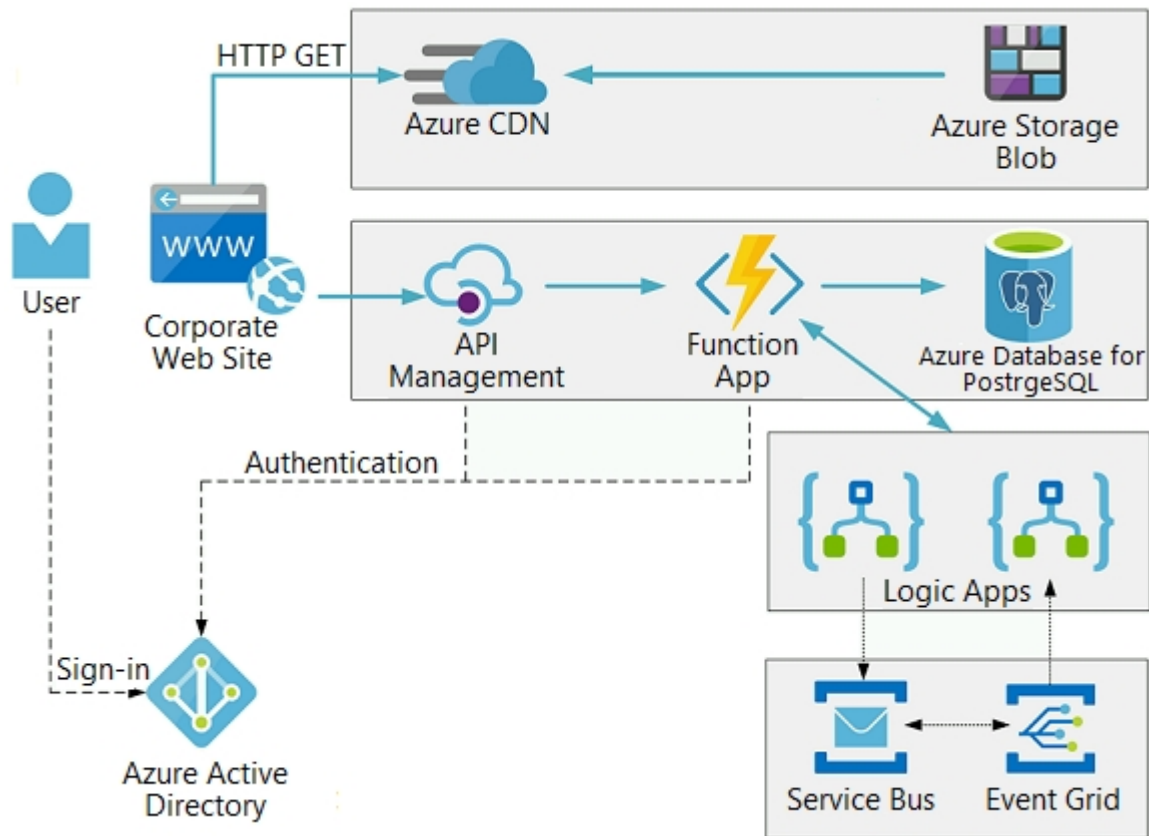
The company has a public website located at <http://www.cpandl.com/>. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

```

SC01 public class Security
SC02 {
SC03     var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04     var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05     var certName = cert.FriendlyName;
SC06 }
  
```

Function app

RequestUserApproval.cs:

```

RA01 public static class RequestUserApproval
RA02 {
RA03     [FunctionName("RequestUserApproval")]
RA04     public static async Task<IActionResult> Run(
RA05     [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req,
RA06     ILogger log)
RA07     {
RA08         log.LogInformation("RequestUserApproval function processed a request.");
RA09         return ProcessRequest(req);
RA10         ? (ActionResult)new OkObjectResult($"User approval processed")
RA11         : new BadRequestObjectResult("Failed to process user approval");
RA12     }
RA13     private static bool ProcessRequest(HttpRequest req)
RA14     {
RA15         ...
RA16     }
RA17 }
  
```

1. The user selects **Sign in** in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Requirements

Corporate website

- Communications and content must be secured by using SSL.
- Communications must use HTTPS.
- Data must be replicated to a secondary region and three availability zones.
- Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

- Azure Key Vault name: cpandlkeyvault
- Secret name: PostgreSQLConn
- Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

- Azure Event Grid must use Azure Service Bus for queue-based load leveling.
- Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
- Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

- All SSL certificates and credentials must be stored in Azure Key Vault.
- File access must restrict access by IP, protocol, and Azure AD rights.
- All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

```
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
```

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

```
FunctionAppLogs  
| where FunctionName == "RequestUserApproval"
```

Logic app

You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

Question 3

You need to correct the RequestUserApproval Function app error.

What should you do?

- ☐ Update line RA13 to use the `async` keyword and return an `HttpRequest` object value.
- ☐ Configure the Function app to use an App Service hosting plan. Enable the **Always On** setting of the hosting plan.
- ☐ Update the function to be stateful by using Durable Functions to process the request payload.
- ☐ Update the `functionTimeout` property of the `host.json` project file to 15 minutes.

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Background

You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

Requirements

Policy service

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies

Log policy

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15♦days.

Authentication events

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

PolicyLib

You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

EventGridController.cs

```

EG01 public class EventGridController : Controller
EG02 {
EG03     public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04     public IActionResult Process([FromBody] string eventsJson)
EG05     {
EG06         var events = JObject.Parse(eventsJson);
EG07
EG08         foreach (var @event in events)
EG09         {
EG10             EventId.Value = @event["id"].ToString();
EG11             if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12             {
EG13                 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14             }
EG15
EG16             {
EG17                 EnsureLogging(@event["subject"].ToString());
EG18             }
EG19         }
EG20         return null;
EG21     }
EG22     private void EnsureLogging(string resource)
EG23     {
EG24         . . .
EG25     }
EG26     private async Task SendToAnomalyDetectionService(string uri)
EG27     {
EG28         var content = GetLogData(uri);
EG29         var scoreRequest = new
EG30         {
EG31             Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32             {
EG33                 {
EG34                     "input1",
EG35                     new List<Dictionary<string, string>>()
EG36                     {
EG37                         new Dictionary<string, string>()
EG38                         {
EG39                             {
EG40                                 "logcontent", content
EG41                             }
EG42                         }
EG43                     }
EG44                 },
EG45             },
EG46             GlobalParameters = new Dictionary<string, string>() { }
EG47         };
EG48         var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49         var rawModelResult = await result.Content.ReadAsStringAsync();
EG50         var modelResult = JObject.Parse(rawModelResult);
EG51         if (modelResult["notify"].HasValues)
EG52         {

```

LoginEvent.cs

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04     public string subject { get; set; }
LE05     public DateTime eventTime { get; set; }
LE06     public Dictionary<string, string> data { get; set; }
LE07     public string Serialize()
LE08     {
LE09         return JsonConvert.SerializeObject(this);
LE10     }
LE11 }
```

- Exclude non-user actions from Application Insights telemetry.
- Provide methods that allow a web service to scale itself.
- Ensure that scaling actions do not disrupt application usage.

Other**Anomaly detection service**

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring

All web applications and services have health monitoring at the /health service endpoint.

Issues**Policy loss**

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

Performance issue

When under heavy load, the anomaly detection service undergoes slowdowns and rejects

connections.

Notification latency

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

App code

EventGridController.cs

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

Question 4

You need to resolve a notification latency issue.

Which two actions should you perform? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ Set Always On to **true**.
- ☐ Ensure that the Azure Function is using an App Service plan.
- ☐ Set Always On to **false**.
- ☐ Ensure that the Azure Function is set to use a consumption plan.

Question 5

DRAG DROP

You are developing an application to use Azure Blob storage. You have configured Azure Blob storage to include change feeds.

A copy of your storage account must be created in another region. Data must be copied from the current storage account to the new storage account directly between the storage servers.

You need to create a copy of the storage account in another region and copy the data.

In which order should you perform the actions? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Use AZCopy to copy the data to the new storage account.

Deploy the template to create a new storage account in the target region.

Export a Resource Manager template.

Create a new template deployment.

Modify the template by changing the storage account name and region.

Answer Area



Question 6

HOTSPOT

You are developing an ASP.NET Core web application. You plan to deploy the application to Azure Web App for Containers.

The application needs to store runtime diagnostic data that must be persisted across application restarts. You have the following code:

```
public void SaveDiagData(string data)
{
    var path = Environment.GetEnvironmentVariable("DIAGDATA");
    File.WriteAllText(Path.Combine(path, "data"), data);
}
```

You need to configure the application settings so that diagnostic data is stored as required.

How should you configure the web app's settings? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

App setting	Value
▼ LOCALAPPDATA WEBSITE_LOCALCACHE_ENABLED DOTNET_HOSTING_OPTIMIZATION_CACHE WEBSITES_ENABLE_APP_SERVICE_STORAGE DIAGDATA	true ▼ /home /local D:\home D:\local

Question 7

You are developing a web app that is protected by Azure Web Application Firewall (WAF). All traffic to the web app is routed through an Azure Application Gateway instance that is used by multiple web apps. The web app address is contoso.azurewebsites.net.

All traffic must be secured with SSL. The Azure Application Gateway instance is used by multiple web apps.

You need to configure the Azure Application Gateway for the web app.

Which two actions should you perform? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ In the Azure Application Gateway's HTTP setting, enable the **Use for App service** setting.
- ☐ Convert the web app to run in an Azure App service environment (ASE).
- ☐ Add an authentication certificate for contoso.azurewebsites.net to the Azure Application Gateway.
- ☐ In the Azure Application Gateway's HTTP setting, set the value of the Override backend path option to **contoso22.azurewebsites.net**.

Question 8

HOTSPOT

You are implementing a software as a service (SaaS) ASP.NET Core web service that will run as an Azure Web App. The web service will use an on-premises SQL Server database for storage. The web service also includes a WebJob that processes data updates. Four customers will use the web service.

- Each instance of the WebJob processes data for a single customer and must run as a singleton instance.
- Each deployment must be tested by using deployment slots prior to serving production data.
- Azure costs must be minimized.
- Azure resources must be located in an isolated network.

You need to configure the App Service plan for the Web App.

How should you configure the App Service plan? To answer, select the appropriate settings in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

App service plan setting

Value

Number of VM instances

	▼
2	
4	
8	
16	

Pricing tier

	▼
Isolated	
Standard	
Premium	
Consumption	

Question 9

DRAG DROP

You are a developer for a software as a service (SaaS) company that uses an Azure Function to process orders. The Azure Function currently runs on an Azure Function app that is triggered by an Azure Storage queue.

You are preparing to migrate the Azure Function to Kubernetes using Kubernetes-based Event Driven Autoscaling (KEDA).

You need to configure Kubernetes Custom Resource Definitions (CRD) for the Azure Function.

Which CRDs should you configure? To answer, drag the appropriate CRD types to the correct locations. Each CRD type may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Answer Area

CRD types	Setting	CRD type
Secret	Azure Function code	
Deployment	Polling interval	
ScaledObject	Azure Storage connection string	
TriggerAuthentication		

Question 10

HOTSPOT

You are creating a CLI script that creates an Azure web app and related services in Azure App Service. The web app uses the following variables:

Variable name	Value
\$gitrepo	https://github.com/Contos/webapp
\$webappname	Webapp1103

You need to automatically deploy code from GitHub to the newly created web app.

How should you complete the script? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
az group create --location westeurope --name myResourceGroup
```

▼ --name \$webappname --resource-group myResourceGroup --sku FREE

- az webapp
- az appservice plan create
- az webapp deployment
- az group delete

▼ --name \$webappname --resource-group myResourceGroup

- az webapp create
- az appservice plan create
- az webapp deployment
- az group delete

▼

- repo-url \$gitrepo --branch master --manual-integration
- git clone \$gitrepo
- plan \$webappname

▼ source config --name \$webappname

- az webapp
- az appservice plan create
- az webapp deployment
- az group delete

--resource-group myResourceGroup ▼

- repo-url \$gitrepo --branch master --manual-integration
- git clone \$gitrepo
- plan \$webappname

Question 11

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.

When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.

You need to design the process that starts the photo processing.

Solution: Trigger the photo processing from Blob storage events.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 12

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You develop and deploy an Azure App Service API app to a Windows-hosted deployment slot named Development. You create additional deployment slots named **Testing** and **Production**. You enable auto swap on the Production deployment slot.

You need to ensure that scripts run and resources are available before a swap operation occurs.

Solution: Update the web.config file to include the applicationInitialization configuration element. Specify custom initialization actions to run the scripts.

Does the solution meet the goal?

- ☐ No
- ☐ Yes

Question 13

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You need to ensure that scripts run and resources are available before a swap operation occurs.

Solution: Enable auto swap for the Testing slot. Deploy the app to the Testing slot.

Does the solution meet the goal?

- ☐ No
- ☐ Yes

Question 14

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You develop and deploy an Azure App Service API app to a Windows-hosted deployment slot named Development. You create additional deployment slots named **Testing** and **Production**. You enable auto swap on the Production deployment slot.

You need to ensure that scripts run and resources are available before a swap operation occurs.

Solution: Disable auto swap. Update the app with a method named statuscheck to run the scripts. Re-enable auto swap and deploy the app to the Production slot.

Does the solution meet the goal?

- ☐ No
- ☐ Yes

Question 15

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When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.

You need to design the process that starts the photo processing.

Solution: Convert the Azure Storage account to a BlockBlobStorage storage account.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 16

HOTSPOT

You are developing an Azure Web App. You configure TLS mutual authentication for the web app.

You need to validate the client certificate in the web app. To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Property	Value
Client certificate location	HTTP request header Client cookie HTTP message body URL query string
Encoding type	HTML URL Unicode Base64

Question 17

DRAG DROP

You are developing a Docker/Go using Azure App Service Web App for Containers. You plan to run the container in an App Service on Linux. You identify a Docker container image to use.

None of your current resource groups reside in a location that supports Linux. You must minimize the number of resource groups required.

You need to create the application and perform an initial deployment.

Which three Azure CLI commands should you use to develop the solution? To answer, move the appropriate commands from the list of commands to the answer area and arrange them in the correct order.

Azure CLI Commands**Answer Area**

az group create

az group update

az webapp update

az webapp create

az appservice plan create



Question 18

DRAG DROP

Fourth Coffee has an ASP.NET Core web app that runs in Docker. The app is mapped to the `www.fourthcoffee.com` domain.

Fourth Coffee is migrating this application to Azure.

You need to provision an App Service Web App to host this docker image and map the custom domain to the App Service web app.

A resource group named `FourthCoffeePublicWebResourceGroup` has been created in the WestUS region that contains an App Service Plan named `AppServiceLinuxDockerPlan`.

Which order should the CLI commands be used to develop the solution? To answer, move all of the Azure CLI commands from the list of commands to the answer area and arrange them in the correct order.

Azure CLI Commands	Answer Area
<pre>az webapp config container set --docker-custom-image-name \$dockerHubContainerPath --name \$appName --resource-group fourthCoffeePublicWebResourceGroup</pre>	> < ↑ ↓
<pre>az webapp config hostname add --webapp-name \$appName --resource-group fourthCoffeePublicWebResourceGroup \ --hostname \$fqdn</pre>	
<pre>az webapp create --name \$appName --plan AppServiceLinuxDockerPlan --resource-group fourthCoffeePublicWebResourceGroup</pre>	
<pre>#!/bin/bash appName="FourthCoffeePublicWeb\$random" location="WestUS" dockerHubContainerPath="FourthCoffee/publicweb:v1" fqdn="http://www.fourthcoffee.com">www.fourthcoffee.com</pre>	

Question 19

DRAG DROP

You are developing a serverless Java application on Azure. You create a new Azure Key Vault to work with secrets from a new Azure Functions application.

The application must meet the following requirements:

- Reference the Azure Key Vault without requiring any changes to the Java code.
- Dynamically add and remove instances of the Azure Functions host based on the number of incoming application events.
- Ensure that instances are perpetually warm to avoid any cold starts.
- Connect to a VNet.
- Authentication to the Azure Key Vault instance must be removed if the Azure Function application is deleted.

You need to grant the Azure Functions application access to the Azure Key Vault.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Create a user-assigned managed identity for the application.

Create the Azure Functions app with a Premium plan type.

Create an access policy in Azure Key Vault for the application identity.

Create an SSL certification in Azure Key Vault for the application identity.

Create the Azure Functions app with an App Service plan type.

Create the Azure Functions app with a Consumption plan type.

Create a system-assigned managed identity for the application.

Answer Area



Question 20

You develop a website. You plan to host the website in Azure. You expect the website to experience high traffic volumes after it is published.

You must ensure that the website remains available and responsive while minimizing cost.

You need to deploy the website.

What should you do?

- ☐ Deploy the website to a virtual machine. Configure the virtual machine to automatically scale when the CPU load is high.
- ☐ Deploy the website to an App Service that uses the Shared service tier. Configure the App Service plan to automatically scale when the CPU load is high.
- ☐ Deploy the website to a virtual machine. Configure a Scale Set to increase the virtual machine instance count when the CPU load is high.
- ☐ Deploy the website to an App Service that uses the Standard service tier. Configure the App Service plan to automatically scale when the CPU load is high.

Question 21

HOTSPOT

A company is developing a Java web app. The web app code is hosted in a GitHub repository located at <https://github.com/Contoso/webapp>.

The web app must be evaluated before it is moved to production. You must deploy the initial code release to a deployment slot named staging.

You need to create the web app and deploy the code.

How should you complete the commands? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
gitrepo=https://github.com/Contoso/webapp
webappname=businesswebapp
resourcegroupname=BusinessAppResourceGroup
```

az	▼ group webapp appservice plan webapp deployment slot webapp deployment source	create --location centralus --name \$resourcegroupname
az	▼ group webapp appservice plan webapp deployment slot webapp deployment source	create --name \$webappname --resource-group \$resourcegroupname --sku S3
az	▼ group webapp appservice plan webapp deployment slot webapp deployment source	create --name \$webappname --resource-group \$resourcegroupname --plan \$webappname
az	▼ group webapp appservice plan webapp deployment slot webapp deployment source	create --name \$webappname --resource-group \$resourcegroupname --slot staging
az	▼ group webapp appservice plan webapp deployment slot webapp deployment source	config --name \$webappname --resource-group \$resourcegroupname \ --slot staging --repo-url \$gitrepo --branch master --manual-integration

Question 22

HOTSPOT

You have a web service that is used to pay for food deliveries. The web service uses Azure Cosmos DB as the data store.

You plan to add a new feature that allows users to set a tip amount. The new feature requires that a property named **tip** on the document in Cosmos DB must be present and contain a numeric value.

There are many existing websites and mobile apps that use the web service that will not be updated to set the tip property for some time.

How should you complete the trigger?

NOTE: Each correct selection is worth one point.

Answer Area

```
function ensureTip() {
  var r = 
  
  __.value();
  __.readDocument('item');
  getContext().getRequest();
  getContext().getResponse();

  var i = r.getBody();
  
  if (!("tip" in i)) {
    if (request.getValue("tip") === null) {
      if (isNaN(i["tip"]) || i["tip"] === null) {
        if (typeof __.pluck("tip") === 'number') {
          i["tip"] = 0;
        }
      }
    }
  }
  
  r.setBody(i);
  r.setValue(i);
  __.upsertDocument(i);
  __.replaceDocument(i);
}
```

Question 23

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.

The app continues to time out after four minutes. The app must process the blob data.

You need to ensure the app does not time out and processes the blob data.

Solution: Use the Durable Function async pattern to process the blob data.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 24

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

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You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.

The app continues to time out after four minutes. The app must process the blob data.

You need to ensure the app does not time out and processes the blob data.

Solution: Pass the HTTP trigger payload into an Azure Service Bus queue to be processed by a queue trigger function and return an immediate HTTP success response.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 25

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop an HTTP triggered Azure Function app to process Azure Storage blob data. The app is triggered using an output binding on the blob.

The app continues to time out after four minutes. The app must process the blob data.

You need to ensure the app does not time out and processes the blob data.

Solution: Configure the app to use an App Service hosting plan and enable the Always On setting.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 26

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop a software as a service (SaaS) offering to manage photographs. Users upload photos to a web service which then stores the photos in Azure Storage Blob storage. The storage account type is General-purpose V2.

When photos are uploaded, they must be processed to produce and save a mobile-friendly version of the image. The process to produce a mobile-friendly version of the image must start in less than one minute.

You need to design the process that starts the photo processing.

Solution: Move photo processing to an Azure Function triggered from the blob upload.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 27

You are developing an application that uses Azure Blob storage.

The application must read the transaction logs of all the changes that occur to the blobs and the blob metadata in the storage account for auditing purposes. The changes must be in the order in which they occurred, include only create, update, delete, and copy operations and be retained for compliance reasons.

You need to process the transaction logs asynchronously.

What should you do?

- ☐ Process all Azure Blob storage events by using Azure Event Grid with a subscriber Azure Function app.
- ☐ Enable the change feed on the storage account and process all changes for available events.
- ☐ Process all Azure Storage Analytics logs for successful blob events.
- ☐ Use the Azure Monitor HTTP Data Collector API and scan the request body for successful blob events.

Question 28

DRAG DROP

You plan to create a Docker image that runs an ASP.NET Core application named ContosoApp. You have a setup script named setupScript.ps1 and a series of application files including ContosoApp.dll.

You need to create a Dockerfile document that meets the following requirements:

- Call setupScripts.ps1 when the container is built.
- Run ContosoApp.dll when the container starts.

The Dockerfile document must be created in the same folder where ContosoApp.dll and setupScript.ps1 are stored.

Which five commands should you use to develop the solution? To answer, move the appropriate commands from the list of commands to the answer area and arrange them in the correct order.

Commands

FROM microsoft/aspnetcore:latest

WORKDIR /apps/ContosoApp

CMD ["dotnet", "ContosoApp.dll"]

COPY ./ .

RUN powershell ./setupScript.ps1

Answer Area

Question 29

You are developing an Azure Function App that processes images that are uploaded to an Azure Blob container.

Images must be processed as quickly as possible after they are uploaded, and the solution must minimize latency. You create code to process images when the Function App is triggered.

You need to configure the Function App.

What should you do?

- ☐ Use an App Service plan. Configure the Function App to use an Azure Blob Storage input trigger.
- ☐ Use a Consumption plan. Configure the Function App to use an Azure Blob Storage trigger.
- ☐ Use a Consumption plan. Configure the Function App to use a Timer trigger.
- ☐ Use an App Service plan. Configure the Function App to use an Azure Blob Storage trigger.
- ☐ Use a Consumption plan. Configure the Function App to use an Azure Blob Storage input trigger.

Question 30

HOTSPOT

You are configuring a new development environment for a Java application.

The environment requires a Virtual Machine Scale Set (VMSS), several storage accounts, and networking components.

The VMSS must not be created until the storage accounts have been successfully created and an associated load balancer and virtual network is configured.

How should you complete the Azure Resource Manager template? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
{
  ...
  "resources": [
    {
      "apiVersion": "2016-01-01",
      "type": "Microsoft.Storage/storageAccounts",
      "name": "[concat(
        
        (), 'storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      ...
      "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": {},
      "tags": {
        
      },
      "name": "storagesetup",
      "count": 3
    },
    {
      "apiVersion": "2015-06-15",
      "type": "Microsoft.Compute/virtualMachines",
      "name": "[concat('VM', uniqueString(resourceGroup().id))]",
      "tags": {
        
      },
      "variables": {
        "loadBalancerName": "[variables('loadBalancerName')]",
        "virtualNetworkName": "[variables('virtualNetworkName')]",
        "storagesetup": "storagesetup",
      },
      ...
    }
  ],
  "outputs": {}
}
```

Question 31

HOTSPOT

You are developing an Azure Function App by using Visual Studio. The app will process orders input by an Azure Web App. The web app places the order information into Azure Queue Storage.

You need to review the Azure Function App code shown below.

```
public static class OrderProcessor
{
    [FunctionName("ProcessOrders")]
    public static void ProcessOrders([QueueTrigger("incoming-orders")]CloudQueueMessage myQueueItem, [Table("Orders")]ICollector<Order> tableBindings, TraceWriter log)
    {
        log.Info($"Processing Order: {myQueueItem.Id}");
        log.Info($"Queue Insertion Time: {myQueueItem.InsertionTime}");
        log.Info($"Queue Expiration Time: {myQueueItem.ExpirationTime}");
        tableBindings.Add(JsonConvert.DeserializeObject<Order>(myQueueItem.AsString));
    }
    [FunctionName("ProcessOrders-Poison")]
    public static void ProcessFailedOrders([QueueTrigger("incoming-orders-poison")]CloudQueueMessage myQueueItem, TraceWriter log)
    {
        log.Error($"Failed to process order: {myQueueItem.AsString}");
        . . .
    }
}
```

NOTE: Each correct selection is worth one point.

Answer Area

	Yes	No
The code will log the time that the order was processed from the queue.	☐	☐
When the ProcessOrders function fails, the function will retry up to five times for a given order, including the first try.	☐	☐
When there are multiple orders in the queue, a batch of orders will be retrieved from the queue and the ProcessOrders function will run multiple instances concurrently to process the orders.	☐	☐
The ProcessOrders function will output the order to an Orders table in Azure Table Storage.	☐	☐

Question 32

DRAG DROP

You are developing a solution for a hospital to support the following use cases:

- The most recent patient status details must be retrieved even if multiple users in different locations have updated the patient record.
- Patient health monitoring data retrieved must be the current version or the prior version.
- After a patient is discharged and all charges have been assessed, the patient billing record contains the final charges.

You provision a Cosmos DB NoSQL database and set the default consistency level for the database

account to **Strong**. You set the value for Indexing Mode to **Consistent**.

You need to minimize latency and any impact to the availability of the solution. You must override the default consistency level at the query level to meet the required consistency guarantees for the scenarios.

Which consistency levels should you implement? To answer, drag the appropriate consistency levels to the correct requirements. Each consistency level may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Consistency levels		Answer Area	
Strong	Bounded Staleness	Return the most recent patient status.	Consistency level
Consistent Prefix	Eventual	Return health monitoring data that is no less than one version behind.	Consistency level
		After patient is discharged and all charges are assessed, retrieve the correct billing data with the final charges.	Consistency level

Question 33

HOTSPOT

You are configuring a development environment for your team. You deploy the latest Visual Studio image from the Azure Marketplace to your Azure subscription.

The development environment requires several software development kits (SDKs) and third-party components to support application development across the organization. You install and customize the deployed virtual machine (VM) for your development team. The customized VM must be saved to allow provisioning of a new team member development environment.

You need to save the customized VM for future provisioning.

Which tools or services should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Action	Tool or service
Generalize the VM.	Azure PowerShell Visual Studio command prompt Azure Migrate Azure Backup
Store images.	Azure Blob Storage Azure Data Lake Storage Azure File Storage Azure Table Storage

Question 34

You are preparing to deploy a website to an Azure Web App from a GitHub repository. The website includes static content generated by a script.

You plan to use the Azure Web App continuous deployment feature.

You need to run the static generation script before the website starts serving traffic.

What are two possible ways to achieve this goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- ☐ Add the path to the static content generation tool to WEBSITE_RUN_FROM_PACKAGE setting in the host.json file.
- ☐ Add a PreBuild target in the websites csproj project file that runs the static content generation script.
- ☐ Create a file named **run.cmd** in the folder **/run** that calls a script which generates the static content and deploys the website.
- ☐ Create a file named **.deployment** in the root of the repository that calls a script which generates the static content and deploys the website.

Develop for Azure storage (15 questions)

Case Study (3 questions)

Case study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the **Question** button to return to the question.

Background

Overview

You are a developer for Contoso, Ltd. The company has a social networking website that is developed as a Single Page Application (SPA). The main web application for the social networking website loads user uploaded content from blob storage.

You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:

- Messages are sent to ContentUploadService.
- Content is processed by ContentAnalysisService.
- After processing is complete, the content is posted to the social network or a rejection message is posted in its place.

The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named contosoimages.

The solution will use eight CPU cores.

Azure Active Directory

Contoso, Ltd. uses Azure Active Directory (Azure AD) for both internal and guest accounts.

Requirements

ContentAnalysisService

The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.

You must create an Azure Function named CheckUserContent to perform the content checks.

Costs

You must minimize costs for all Azure services.

Manual review

To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication. In order to review content a user must be part of a ContentReviewer role. All completed reviews must include the reviewer's email address for auditing purposes.

High availability

All services must run in multiple regions. The failure of any service in a region must not impact overall application availability.

Monitoring

An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.

Security

You have the following security requirements:

```

CS01 apiVersion: '2018-10-01'
CS02 type: Microsoft.ContainerInstance/containerGroups
CS03 location: westus
CS04 name: contentUploadService
CS05 properties:
CS06   containers:
CS07   - name: service
CS08     properties:
CS09       image: contoso/contentUploadService:latest
CS10       ports:
CS11       - port: 80
CS12         protocol: TCP
CS13       resources:
CS14         requests:
CS15           cpu: 1.0
CS16           memoryInGB: 1.5
CS17
CS18 ipAddress:
CS19   ip: 10.23.121.112
CS20   ports:
CS21   - port: 80
CS22     protocol: TCP
CS23
CS24
CS25 networkProfile:
CS26
id: /subscriptions/98...19/resourceGroups/container/providers/Microsoft.Network/networkProfiles/subnet

AM01 {
AM02   "id" : "2b079f03-9b06-2d44-98bb-e9182901fcb6",
AM03   "appId" : "7118a7f0-b5c2-4c9d-833c-3d711396fe65",
AM04
AM05   "createdDateTime" : "2019-12-24T06:01:44Z",
AM06   "logoUrl" : null,
AM07   "logoutUrl" : null,
AM08   "name" : "ContentAnalysisService",
AM09
AM10
AM11   "orgRestrictions" : [],
AM12   "parentalControlSettings" : {
AM13     "countriesBlockedForMinors" : [],
AM14     "legalAgeGroupRule" : "Allow"
AM15   },
AM16   "passwordCredentials" : []
AM17 }

```

- Any web service accessible over the Internet must be protected from cross site scripting attacks.
- All websites and services must use SSL from a valid root certificate authority.
- Azure Storage access keys must only be stored in memory and must be available only to the service.
- All Internal services must only be accessible from internal Virtual Networks (VNETs).
- All parts of the system must support inbound and outbound traffic restrictions.
- All service calls must be authenticated by using Azure AD.

User agreements

When a user submits content, they must agree to a user agreement. The agreement allows employees of Contoso, Ltd. to review content, store cookies on user devices, and track user's IP addresses.

Information regarding agreements is used by multiple divisions within Contoso, Ltd.

User responses must not be lost and must be available to all parties regardless of individual service uptime. The volume of agreements is expected to be in the millions per hour.

Validation testing

When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.

Issues

Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.

Code

ContentUploadService

Question 35

You need to configure the ContentUploadService deployment.

Which two actions should you perform? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ Add the following markup to line CS23:
type: Private
- ☐ Add the following markup to line CS24:
osType: Windows
- ☐ Add the following markup to line CS24:
osType: Linux
- ☐ Add the following markup to line CS23:
type: Public

Question 36

You need to store the user agreements.

Where should you store the agreement after it is completed?

- ☐ Azure Storage queue
- ☐ Azure Event Hub
- ☐ Azure Service Bus topic
- ☐ Azure Event Grid topic

Question 37

HOTSPOT

You need to implement the bindings for the CheckUserContent function.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
public static class CheckUserContent
{
    [FunctionName("CheckUserContent")]
    public static void Run(
        [▼ string content,
        [QueueTrigger("userContent")]
        [BlobTrigger("userContent/{name}")]
        [CosmosDBTrigger("content", "userContent")]
        [Table("content", "userContent", "{name}")]
        [▼ Stream output)
        [Queue("userContent")]
        [CosmosDB("content", "userContent")]
        [Table("content", "userContent", "{name}")]
        [Blob("userContent/{name}", FileAccess.Write)]
    {
        ...
    }
}
```

Case Study (1 questions)

Case study

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Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

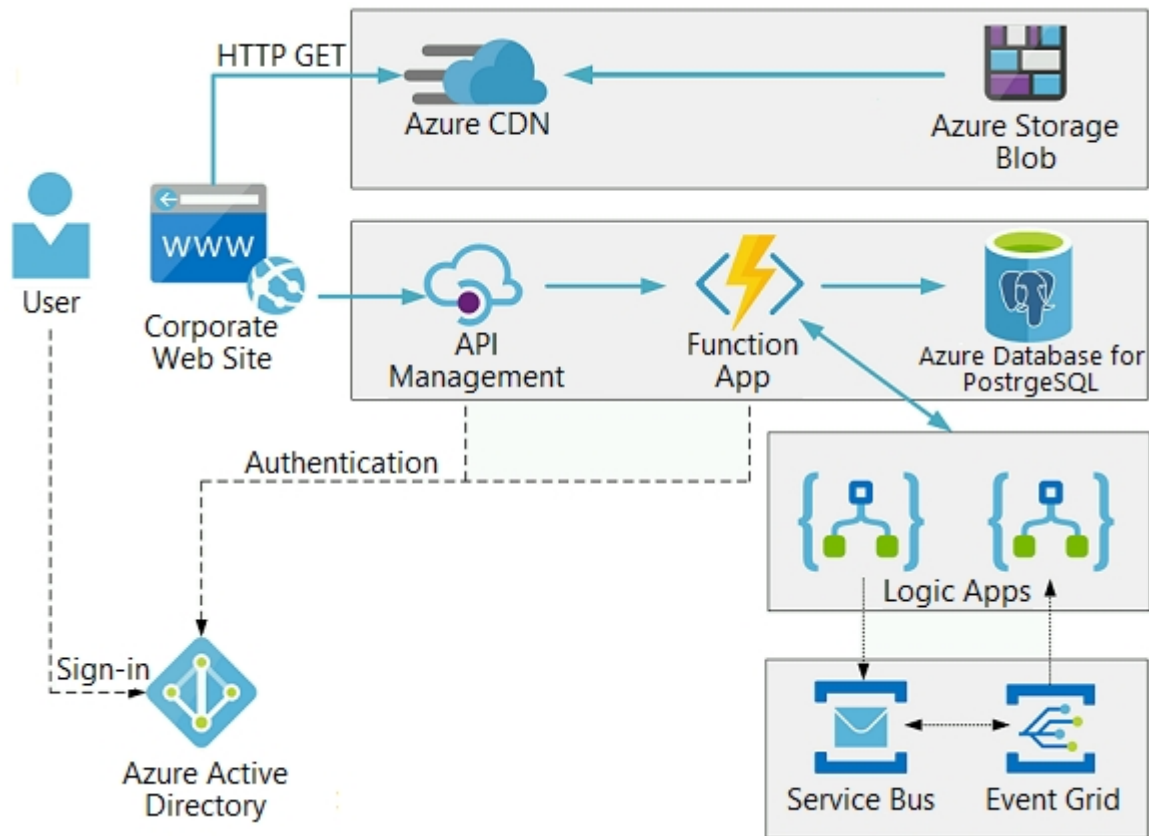
The company has a public website located at <http://www.cpandl.com/>. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

```

SC01 public class Security
SC02 {
SC03     var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04     var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05     var certName = cert.FriendlyName;
SC06 }
  
```

Function app

RequestUserApproval.cs:

```

RA01 public static class RequestUserApproval
RA02 {
RA03     [FunctionName("RequestUserApproval")]
RA04     public static async Task<IActionResult> Run(
RA05     [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req,
RA06     ILogger log)
RA07     {
RA08         log.LogInformation("RequestUserApproval function processed a request.");
RA09         return ProcessRequest(req)
RA10         ? (ActionResult)new OkObjectResult($"User approval processed")
RA11         : new BadRequestObjectResult("Failed to process user approval");
RA12     }
RA13     private static bool ProcessRequest(HttpRequest req)
RA14     {
RA15         ...
RA16     }
RA17 }
  
```

1. The user selects **Sign in** in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Requirements

Corporate website

- Communications and content must be secured by using SSL.
- Communications must use HTTPS.
- Data must be replicated to a secondary region and three availability zones.
- Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

- Azure Key Vault name: cpandlkeyvault
- Secret name: PostgreSQLConn
- Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

- Azure Event Grid must use Azure Service Bus for queue-based load leveling.
- Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
- Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

- All SSL certificates and credentials must be stored in Azure Key Vault.
- File access must restrict access by IP, protocol, and Azure AD rights.
- All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

```
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
```

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

```
FunctionAppLogs  
| where FunctionName == "RequestUserApproval"
```

Logic app

You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

Question 38

HOTSPOT

You need to configure the Account Kind, Replication, and Storage tier options for the corporate website's Azure Storage account.

How should you complete the configuration? To answer, select the appropriate options in the dialog box in the answer area.

NOTE: Each correct selection is worth one point.

Create storage account



Basics **Advanced** Tags Review + create

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more](#)

PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

* Subscription	Visual Studio Enterprise
* Resource group	(New) cplcorporatesite

[Create new](#)

INSTANCE DETAILS

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

* Storage account name ⓘ	corporatewebsitecontent ✓
* Location	(US) East US
Performance ⓘ	☒ Standard ☐ Premium
Account kind ⓘ	StorageV2 (general purpose v2) Storage (general purpose v1) BlobStorage
Replication ⓘ	Locally-redundant storage (LRS) Zone-redundant storage (ZRS) Geo-redundant storage (GRS) Read-access geo-redundant storage (RA-GRS) Geo-zone-redundant storage (GZRS) Read-access geo-zone-redundant storage (RA-GZRS)
Access tier (default) ⓘ	☐ Cool ☐ Hot

Question 39

You develop Azure solutions.

You must connect to a No-SQL globally-distributed database by using the .NET API.

You need to create an object to configure and execute requests in the database.

Which code segment should you use?

- ☐ `new Container(EndpointUri, PrimaryKey);`
- ☐ `new Database(EndpointUri, PrimaryKey);`
- ☐ `new CosmosClient(EndpointUri, PrimaryKey);`

Question 40

DRAG DROP

You are developing a new page for a website that uses Azure Cosmos DB for data storage. The

```
{
  "name": "John",
  "city" : "Seattle"
}
```

feature uses documents that have the following format:

You must display data for the new page in a specific order. You create the following query for the

```
SELECT*
FROM People p
ORDER BY p.name, p.city DESC
```

page:

You need to configure a Cosmos DB policy to support the query.

How should you configure the policy? To answer, drag the appropriate JSON segments to the correct locations. Each JSON segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

JSON segments	Answer Area
orderBy	<pre>{ "automatic": true, "ngMode": "Consistent", "includedPaths": [{ "path": "/" }], "excludedPaths": [], "": [{ "path": "/name", "order": "descending" }, { "path": "/city", "order": " " }] }</pre>
sortOrder	
ascending	
descending	
compositeIndexes	

Question 41

HOTSPOT

You are building a traffic monitoring system that monitors traffic along six highways. The system produces time series analysis-based reports for each highway. Data from traffic sensors are stored in Azure Event Hub.

Traffic data is consumed by four departments. Each department has an Azure Web App that displays the time series-based reports and contains a WebJob that processes the incoming data from Event Hub. All Web Apps run on App Service Plans with three instances.

Data throughput must be maximized. Latency must be minimized.

You need to implement the Azure Event Hub.

Which settings should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Setting	Value
Number of partitions	3 4 6 12
Partition Key	Highway Department Timestamp VM name

Question 42

DRAG DROP

You are developing a microservices solution. You plan to deploy the solution to a multinode Azure Kubernetes Service (AKS) cluster.

You need to deploy a solution that includes the following features:

- reverse proxy capabilities
- configurable traffic routing
- TLS termination with a custom certificate

Which components should you use? To answer, drag the appropriate components to the correct requirements. Each component may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Answer Area

Components	Action	Component
Helm		
Draft	Deploy solution.	
Brigade	View cluster and external IP addressing.	
KubeCtl	Implement a single, public IP endpoint that is routed to multiple microservices.	
Ingress Controller		
CoreDNS		
Virtual Kubelet		

Question 43

DRAG DROP

You are implementing an order processing system. A point of sale application publishes orders to topics in an Azure Service Bus queue. The Label property for the topic includes the following data:

Property	Description
ShipLocation	the country/region where the order will be shipped
CorrelationId	a priority value for the order
Quantity	a user-defined field that stores the quantity of items in an order
AuditedAt	a user-defined field that records the date an order is audited

The system has the following requirements for subscriptions:

Subscription type	Comments
FutureOrders	This subscription is reserved for future use and must not receive any orders
HighPriorityOrders	Handle all high priority orders and international orders
InternationalOrders	Handle orders where the country/region is not United States
HighQuantityOrders	Handle only orders with quantities greater than 100 units
AllOrders	This subscription is used for auditing purposes. This subscription must receive every single order. AllOrders has an Action defined that updates the AuditedAt property to include the date and time it was received by the subscription.

You need to implement filtering and maximize throughput while evaluating filters.

Which filter types should you implement? To answer, drag the appropriate filter types to the correct subscriptions. Each filter type may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Filter types

SQLFilter

CorrelationFilter

No Filter

Answer Area**Subscription**

FutureOrders

HighPriorityOrders

InternationalOrders

HighQuantityOrders

AllOrders

Filter type

filter type

filter type

filter type

filter type

filter type

Question 44

DRAG DROP

Your company has several websites that use a company logo image. You use Azure Content Delivery Network (CDN) to store the static image.

You need to determine the correct process of how the CDN and the Point of Presence (POP) server will distribute the image and list the items in the correct order.

In which order do the actions occur? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

Actions

If no edge servers in the POP have the image in cache, the POP requests the file from the origin server.

A user requests the image from the CDN URL. The DNS routes the request to the best performing POP location.

Subsequent requests for the file may be directed to the same POP using the CDN logo image URL. The POP edge server returns the file from cache if the TTL has not expired.

The origin server returns the logo image to an edge server in the POP. An edge server in the POP caches the logo image and returns the image to the client.

Answer Area



Question 45

You are developing an Azure Cosmos DB solution by using the Azure Cosmos DB SQL API. The data includes millions of documents. Each document may contain hundreds of properties.

The properties of the documents do not contain distinct values for partitioning. Azure Cosmos DB must scale individual containers in the database to meet the performance needs of the application by spreading the workload evenly across all partitions over time.

You need to select a partition key.

Which two partition keys can you use? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- ☐ a single property value that does not appear frequently in the documents
- ☐ a value containing the collection name
- ☐ a single property value that appears frequently in the documents
- ☐ a concatenation of multiple property values with a random suffix appended
- ☐ a hash suffix appended to a property value

Question 46

HOTSPOT

A company develops a series of mobile games. All games use a single leaderboard service.

You have the following requirements:

PartitionKey	RowKey	Email
Harp	Walter	wharp@contoso.com
Smith	Steve	ssmith@contoso.com
Smith	Jeff	jsmith@contoso.com

You develop the following code to save scores in the data store. (Line numbers are included for reference only.)

```

01 public void SaveScore(string gameId, string playerId, int score, long timePlayed)
02 {
03     CloudStorageAccount storageAccount = CloudStorageAccount.Parse(connectionString);
04     CloudTableClient tableClient = storageAccount.CreateCloudTableClient();
05     CloudTable table = tableClient.GetTableReference("scoreTable");
06     table.CreateIfNotExists();
07     var scoreRecord = new PlayerScore(gameId, playerId, score, timePlayed);
08     TableOperation insertOperation = TableOperation.Insert(scoreRecord);
09     table.Execute(insertOperation);
10 }

```

You develop the following code to query the database. (Line numbers are included for reference only.)

```

01 CloudTableClient tableClient = account.CreateCloudTableClient();
02 CloudTable table = tableClient.GetTableReference("people");
03 TableQuery<CustomerEntity> query = new TableQuery<CustomerEntity>()
04     .Where(TableQuery.CombineFilters(
05         TableQuery.GenerateFilterCondition(PartitionKey, QueryComparisons.Equal, "Smith"),
06         TableOperators.And,
07         TableQuery.GenerateFilterCondition(Email, QueryComparisons.Equal, "ssmith@contoso.com")
08     ));
09 await table.ExecuteQuerySegmentedAsync<CustomerEntity>(query, null);

```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

- Code must be scalable and allow for growth.
- Each record must consist of a playerId, gameId, score, and time played.
- When users reach a new high score, the system will save the new score using the SaveScore function below.
- Each game is assigned an Id based on the series title.

You plan to store customer information in Azure Cosmos DB. The following data already exists in the database:

Answer Area

Statements	Yes	No
SaveScore will work with Cosmos DB.	☐	☐
SaveScore will update and replace a record if one already exists with the same playerId and gameId.	☐	☐
Leader board data for the game will be automatically partitioned using gameId.	☐	☐
SaveScore will store the values for the gameId and playerId parameters in the database.	☐	☐

Question 47**HOTSPOT**

You are developing a solution that uses the Azure Storage Client library for .NET. You have the following code: (Line numbers are included for reference only.)

```

01 CloudBlockBlob src = null;
02 try
03 {
04     src = container.ListBlobs().OfType<CloudBlockBlob>().FirstOrDefault();
05     var id = await src.AcquireLeaseAsync(null);
06     var dst = container.GetBlockBlobReference(src.Name);
07     string cpid = await dst.StartCopyAsync(src);
08     await dst.FetchAttributeAsync();
09     return id;
10 }
11 catch (Exception e)
12 {
13     throw;
14 }
15 finally
16 {
17     if (src != null)
18         await src.FetchAttributesAsync();
19     if (src.Properties.LeaseState != LeaseState.Available)
20         await src.BreakLeaseAsync(new TimeSpan(0));
21 }

```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Answer Area

Statement	Yes	No
The code creates an infinite lease	☐	☐
The code at line 06 always creates a new blob	☐	☐
The finally block releases the lease	☐	☐

Question 48

You are building a website that uses Azure Blob storage for data storage. You configure Azure Blob storage lifecycle to move all blobs to the archive tier after 30 days.

Customers have requested a service-level agreement (SLA) for viewing data older than 30 days.

You need to document the minimum SLA for data recovery.

Which SLA should you use?

- ☐ at least two days
- ☐ between one and 15 hours
- ☐ at least one day
- ☐ between zero and 60 minutes

Question 49

HOTSPOT

You are developing a ticket reservation system for an airline.

The storage solution for the application must meet the following requirements:

- Ensure at least 99.99% availability and provide low latency.
- Accept reservations event when localized network outages or other unforeseen failures occur.
- Process reservations in the exact sequence as reservations are submitted to minimize overbooking or selling the same seat to multiple travelers.
- Allow simultaneous and out-of-order reservations with a maximum five-second tolerance window.

You provision a resource group named `airlineResourceGroup` in the Azure South-Central US region.

You need to provision a SQL API Cosmos DB account to support the app.

How should you complete the Azure CLI commands? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
resourceGroupName= 'airlineResourceGroup'
name= 'docdb-airline-reservations'
databaseName= 'docdb-tickets-database'
collectionName= 'docdb-tickets-collection'
consistencyLevel=
```

▼
Strong
Eventual
ConsistentPrefix
BoundedStaleness

```
az cosmosdb create \
--name $name \
```

▼
--enable-virtual-network true \
--enable-automatic-failover true \
--kind 'GlobalDocumentDB' \
--kind 'MongoDB' \

```
--resource-group $resourceGroupName \  
--max-interval 5 \
```

▼
--locations 'southcentralus'
--locations 'eastus'
--locations 'southcentralus=0 eastus=1 westus=2'
--locations 'southcentralus=0'

```
--default-consistency-level = $consistencylevel
```

Question 50

HOTSPOT

You are preparing to deploy a Python website to an Azure Web App using a container. The solution will use multiple containers in the same container group. The Dockerfile that builds the container is

```
FROM python:3
ADD website.py
CMD [ "python", "./website.py"]
```

as follows:

You build a container by using the following command. The Azure Container Registry instance named images is a private registry.

```
docker build -t images.azurecr.io/website:v1.0.0
```

The user name and password for the registry is **admin**.

The Web App must always run the same version of the website regardless of future builds.

You need to create an Azure Web App to run the website.

How should you complete the commands? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
az configure --defaults web=website
az configure --defaults group=website
az appservice plan create --name websitePlan
```

--sku SHARED
--tags container
--sku B1 --hyper-v
--sku B1 --is-linux

```
az webapp create --plan websitePlan
```

--deployment-source-url images.azurecr.io/website:v1.0.0
--deployment-source-url images.azurecr.io/website:latest
--deployment-container-image-name images.azurecr.io/website:v1.0.0
--deployment-container-image-name images.azurecr.io/website:latest

```
az webapp config
```

set --python-version 2.7 --generic-configurations user=admin password=admin
set --python-version 3.6 --generic-configurations user=admin password=admin
container set --docker-registry-server-url https://images.azurecr.io -u admin -p admin
container set --docker-registry-server-url https://images.azurecr.io/wsebsite -u admin -p admin

Question 51

HOTSPOT

You are developing a back-end Azure App Service that scales based on the number of messages contained in a Service Bus queue.

A rule already exists to scale up the App Service when the average queue length of unprocessed and valid queue messages is greater than 1000.

You need to add a new rule that will continuously scale down the App Service as long as the scale up condition is not met.

How should you configure the Scale rule? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Scale rule

✕

Metric source

▼

Storage queue
Service Bus queue
Current resource
Storage queue (classic)

Resource type

Service Bus Namespaces ▼

Resource

MessageQueue1103 ▼

* Queues

itemqueue ▼

Criteria

* Metric name

▼

Message Count
Active Message Count

1 minute time grain

* Time grain statistic ⓘ

▼

Total
Maximum
Average
Count

* Operator

▼

Greater than
Greater than or equal to
Less than
Less than or equal to

* Threshold

1000 ▼

Action

* Operation

▼

Increase count by
Increase count to
Decrease count by
Decrease count to

Question 52

DRAG DROP

You have an application that uses Azure Blob storage.

You need to update the metadata of the blobs.

Which three methods should you use to develop the solution? To answer, move the appropriate methods from the list of methods to the answer area and arrange them in the correct order.

Methods`Metadata.Add``SetMetadataAsync``FetchAttributesAsync``UploadFileStream``SetPropertiesAsync`**Answer Area**

Question 53

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.

You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.

You need to implement a solution to receive the device data.

Solution: Provision an Azure Event Grid. Configure the machine identifier as the partition key and enable capture.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Implement Azure security (24 questions)

Case Study (3 questions)

Case study

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To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the **Question** button to return to the question.

Background

Overview

You are a developer for Contoso, Ltd. The company has a social networking website that is developed as a Single Page Application (SPA). The main web application for the social networking website loads user uploaded content from blob storage.

You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:

- Messages are sent to ContentUploadService.
- Content is processed by ContentAnalysisService.
- After processing is complete, the content is posted to the social network or a rejection message is posted in its place.

The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named contosoimages.

The solution will use eight CPU cores.

Azure Active Directory

Contoso, Ltd. uses Azure Active Directory (Azure AD) for both internal and guest accounts.

Requirements

ContentAnalysisService

The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.

You must create an Azure Function named CheckUserContent to perform the content checks.

Costs

You must minimize costs for all Azure services.

Manual review

To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication. In order to review content a user must be part of a ContentReviewer role. All completed reviews must include the reviewer's email address for auditing purposes.

High availability

All services must run in multiple regions. The failure of any service in a region must not impact overall application availability.

Monitoring

An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.

Security

You have the following security requirements:

```

CS01 apiVersion: '2018-10-01'
CS02 type: Microsoft.ContainerInstance/containerGroups
CS03 location: westus
CS04 name: contentUploadService
CS05 properties:
CS06   containers:
CS07     - name: service
CS08       properties:
CS09         image: contoso/contentUploadService:latest
CS10         ports:
CS11           - port: 80
CS12             protocol: TCP
CS13         resources:
CS14           requests:
CS15             cpu: 1.0
CS16             memoryInGB: 1.5
CS17
CS18 ipAddress:
CS19   ip: 10.23.121.112
CS20   ports:
CS21     - port: 80
CS22       protocol: TCP
CS23
CS24
CS25 networkProfile:
CS26
id: /subscriptions/98...19/resourceGroups/container/providers/Microsoft.Network/networkProfiles/subnet

AM01 {
AM02   "id" : "2b079f03-9b06-2d44-98bb-e9182901fcb6",
AM03   "appId" : "7118a7f0-b5c2-4c9d-833c-3d711396fe65",
AM04
AM05   "createdDateTime" : "2019-12-24T06:01:44Z",
AM06   "logoUrl" : null,
AM07   "logoutUrl" : null,
AM08   "name" : "ContentAnalysisService",
AM09
AM10
AM11   "orgRestrictions" : [],
AM12   "parentalControlSettings" : {
AM13     "countriesBlockedForMinors" : [],
AM14     "legalAgeGroupRule" : "Allow"
AM15   },
AM16   "passwordCredentials" : []
AM17 }

```

- Any web service accessible over the Internet must be protected from cross site scripting attacks.
- All websites and services must use SSL from a valid root certificate authority.
- Azure Storage access keys must only be stored in memory and must be available only to the service.
- All Internal services must only be accessible from internal Virtual Networks (VNETs).
- All parts of the system must support inbound and outbound traffic restrictions.
- All service calls must be authenticated by using Azure AD.

User agreements

When a user submits content, they must agree to a user agreement. The agreement allows employees of Contoso, Ltd. to review content, store cookies on user devices, and track user's IP addresses.

Information regarding agreements is used by multiple divisions within Contoso, Ltd.

User responses must not be lost and must be available to all parties regardless of individual service uptime. The volume of agreements is expected to be in the millions per hour.

Validation testing

When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.

Issues

Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.

Code

ContentUploadService

Question 54

DRAG DROP

You need to add markup at line AM04 to implement the ContentReview role.

How should you complete the markup? To answer, drag the appropriate json segments to the correct locations. Each json segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Json segments

Answer Area

```
"appRoles": [  
  {  
    "  ": [  
      "  "  
    ],  
    "displayName": "ContentReviewer",  
    "id": "e1c2ade8-98f8-45fd-aa4a-6d24b512c22a",  
    "isEnabled" : true,  
    "  " : "ContentReviewer"  
  },  
],
```

Question 55

HOTSPOT

You need to add code at line AM09 to ensure that users can review content using ContentAnalysisService.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

▼

"allowPublicClient":true

"oauth2Permissions":["login"]

"oauth2AllowUrlPathMatching":true

"oauth2AllowIdTokenImplicitFlow":true

▼

"oauth2AllowImplicitFlow": true

"oauth2RequiredPostResponse":true

"preAuthorizedApplications":["SPA"]

"knownClientApplications":["ContentAnalysisService"]

Question 56

HOTSPOT

You need to ensure that network security policies are met.

How should you configure network security? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Technology	Value
SSL certificate	Valid root certificate Self-signed certificate
Proxy type	nginx Azure Application Gateway

Case Study (2 questions)

Case study

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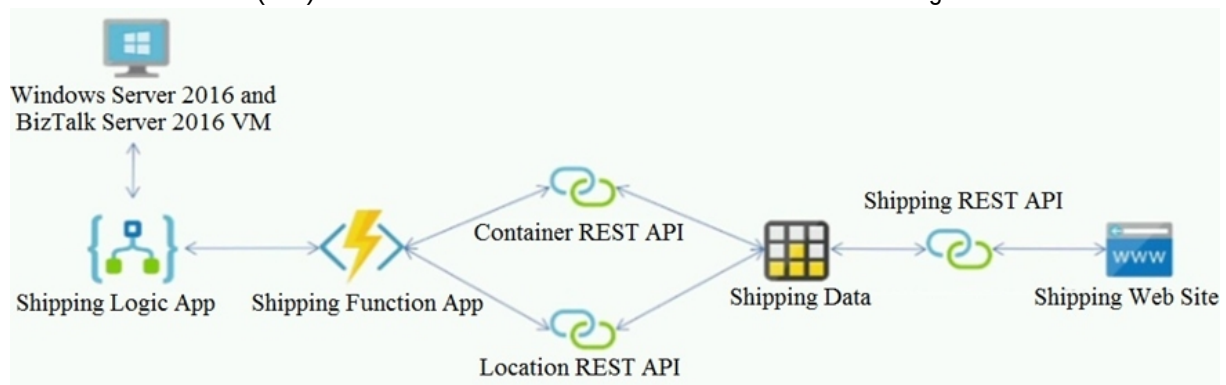
To start the case study

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Current environment

Windows Server 2016 virtual machine

This virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:



Requirements

Shipping Logic app

The Shipping Logic app must meet the following requirements:

- Support the ocean transport and inland transport workflows by using a Logic App.

- Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.
- Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
- Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.

Shipping Function app

Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).

REST APIs

The REST API's that support the solution must meet the following requirements:

- Secure resources to the corporate VNet.
- Allow deployment to a testing location within Azure while not incurring additional costs.
- Automatically scale to double capacity during peak shipping times while not causing application downtime.
- Minimize costs when selecting an Azure payment model.

Shipping data

Data migration from on-premises to Azure must minimize costs and downtime.

Shipping website

Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.

Issues

Windows Server 2016 VM

The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.

Shipping website and REST APIs

The following error message displays while you are testing the website:

```
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin 'http://test.wideworldimporters.com/' is therefore not allowed access.
```

- Ocean Transport – This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.
- Inland Transport – This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.

The VM supports the following REST API calls:

- Container API – This API provides container information including weight, contents, and other attributes.
- Location API – This API provides location information regarding shipping ports of call and trucking stops.
- Shipping REST API – This API provides shipping information for use and display on the shipping website.

Shipping Data

The application uses MongoDB JSON document storage database for all container and transport information.

Shipping Web Site

The site displays shipping container tracking information and container contents. The site is located at <http://shipping.wideworldimporters.com/>

Proposed solution

The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard_D16s_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations. You create a Standard_D16s_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:

Question 57

HOTSPOT

You need to secure the Shipping Function app.

How should you configure the app? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Setting	Value
Authorization level	Function Anonymous Admin
User claims	JSON Web Token (JWT) Shared Access Signature (SAS) token API Key
Trigger type	blob HTTP queue timer

Question 58

You need to secure the Shipping Logic App.

What should you use?

- ☐ Azure App Service Environment (ASE)
- ☐ Integration Service Environment (ISE)
- ☐ VNet service endpoint
- ☐ Azure AD B2B integration

Case Study (6 questions)

Case study

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To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the **Question** button to return to the question.

Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

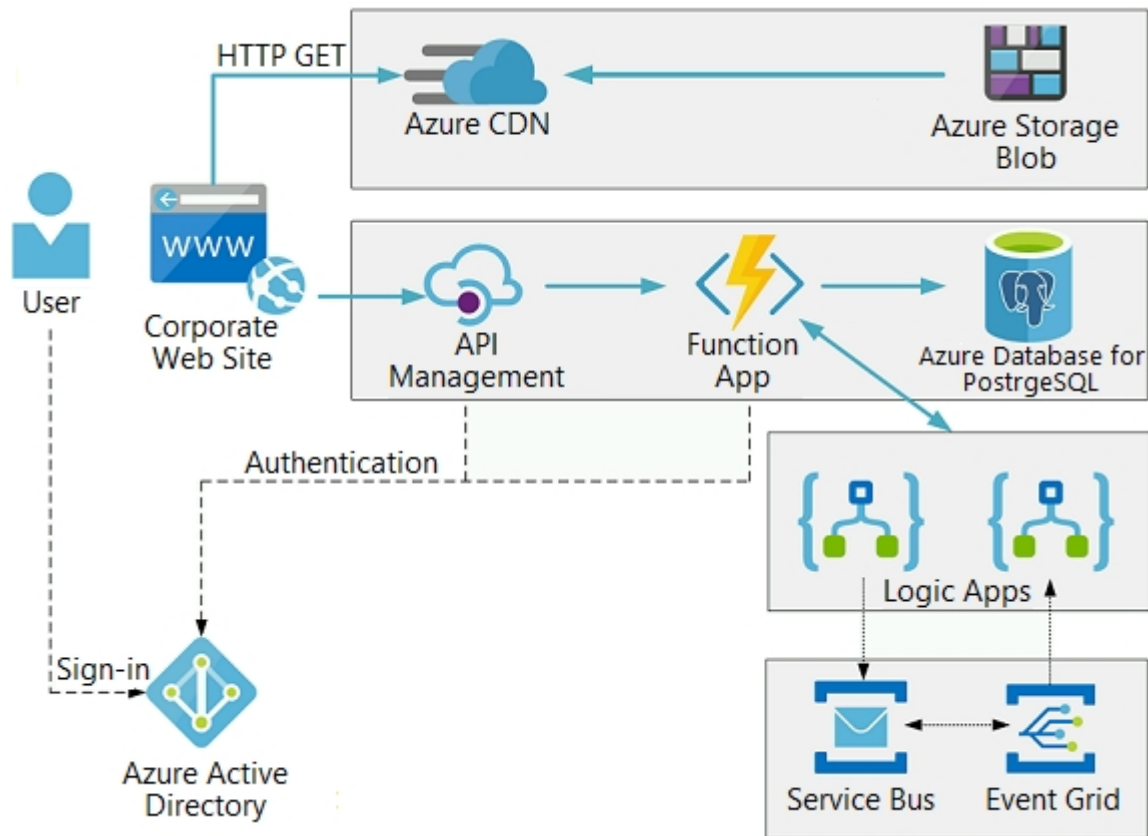
The company has a public website located at <http://www.cpandl.com/>. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

```

SC01 public class Security
SC02 {
SC03     var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04     var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05     var certName = cert.FriendlyName;
SC06 }
  
```

Function app

RequestUserApproval.cs:

```

RA01 public static class RequestUserApproval
RA02 {
RA03     [FunctionName("RequestUserApproval")]
RA04     public static async Task

```

1. The user selects **Sign in** in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Requirements

Corporate website

- Communications and content must be secured by using SSL.
- Communications must use HTTPS.
- Data must be replicated to a secondary region and three availability zones.
- Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

- Azure Key Vault name: cpandlkeyvault
- Secret name: PostgreSQLConn
- Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

- Azure Event Grid must use Azure Service Bus for queue-based load leveling.
- Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
- Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

- All SSL certificates and credentials must be stored in Azure Key Vault.
- File access must restrict access by IP, protocol, and Azure AD rights.
- All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

```
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
```

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

```
FunctionAppLogs  
| where FunctionName == "RequestUserApproval"
```

Logic app

You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

Question 59

HOTSPOT

You need to retrieve the database connection string.

Which values should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

REST API Endpoint:

https:// /

Variable type to access Azure Key Vault secret values:

Question 60

DRAG DROP

You need to correct the corporate website error.

Which four actions should you recommend be performed in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Upload the certificate to Azure Key Vault.

Update line SC05 of Security.cs to include error handling and then redeploy the code.

Update line SC03 of Security.cs to include a using statement and then re-deploy the code.

Add the certificate thumbprint to the WEBSITE_LOAD_CERTIFICATES app setting.

Upload the certificate to source control.

Import the certificate to Azure App Service.

Generate a certificate.

Answer Area

Question 61

HOTSPOT

You need to configure API Management for authentication.

Which policy values should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Setting	Value
Policy	Check HTTP header Restrict caller IPs Limit call rate by key Validate JWT
Policy section	Inbound Outbound

Question 62

You need to authenticate the user to the corporate website as indicated by the architectural diagram.

Which two values should you use? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ ID token signature
- ☐ ID token claims
- ☐ HTTP response code
- ☐ Azure AD endpoint URI
- ☐ Azure AD tenant ID

Question 63

HOTSPOT

You need to correct the Azure Logic app error message.

Which configuration values should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Setting	Value
authentication level	▼ anonymous function admin
managed identity	▼ system-assigned user-assigned

Question 64

HOTSPOT

You need to configure Azure Service Bus to Event Grid integration.

Which Azure Service Bus settings should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Setting	Value
Tier	Basic Standard Premium
RBAC role	Owner Contributor Azure Service Bus Data Owner Azure Service Bus Data Receiver

Question 65

DRAG DROP

You are developing an application. You have an Azure user account that has access to two subscriptions.

You need to retrieve a storage account key secret from Azure Key Vault.

In which order should you arrange the PowerShell commands to develop the solution? To answer, move all commands from the list of commands to the answer area and arrange them in the correct order.

Powershell commands

```
$secretvalue = ConvertTo-SecureString  
$storAcctkey -AsPlainText  
-Force  
Set-AzKeyVaultSecret -VaultName  
$vaultName -Name $secretName  
-SecretValue $secretvalue
```

```
Get-AzStorageAccountKey -  
ResourceGroupName $resGroup -Name  
$storAcct
```

```
Set-AzContext -SubscriptionId  
$subscriptionID
```

```
Get-AzKeyVaultSecret -VaultName  
$vaultName
```

```
Get-AzSubscription
```

Answer Area



Question 66

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop Azure solutions.

You must grant a virtual machine (VM) access to specific resource groups in Azure Resource Manager.

You need to obtain an Azure Resource Manager access token.

Solution: Use an X.509 certificate to authenticate the VM with Azure Resource Manager.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 67

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop Azure solutions.

You must grant a virtual machine (VM) access to specific resource groups in Azure Resource Manager.

You need to obtain an Azure Resource Manager access token.

Solution: Use the Reader role-based access control (RBAC) role to authenticate the VM with Azure Resource Manager.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 68

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You develop Azure solutions.

You must grant a virtual machine (VM) access to specific resource groups in Azure Resource Manager.

You need to obtain an Azure Resource Manager access token.

Solution: Run the Invoke-RestMethod cmdlet to make a request to the local managed identity for Azure resources endpoint.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 69

HOTSPOT

You are building a website to access project data related to teams within your organization. The website does not allow anonymous access. Authentication is performed using an Azure Active Directory (Azure AD) app named **internal**.

The website has the following authentication requirements:

- Azure AD users must be able to login to the website.
- Personalization of the website must be based on membership in Active Directory groups.

You need to configure the application's manifest to meet the authentication requirements.

How should you configure the manifest? To answer, select the appropriate configuration in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
{
  ...
  "appId": "d61126e3-089b-4adb-b721-d5023213df7d",
  "displayName": "internal",
  [redacted] : "All",
  "optionalClaims"
  "groupMembershipClaims"
  [redacted] : true
  "allowPublicClient"
  "oauth2Permissions"
  "requiredResourceAccess"
  "oauth2AllowImplicitFlow"
}
```

Question 70

You develop an app that allows users to upload photos and videos to Azure storage. The app uses a storage REST API call to upload the media to a blob storage account named Account1. You have blob storage containers named Container1 and Container2.

Uploading of videos occurs on an irregular basis.

You need to copy specific blobs from Container1 to Container2 when a new video is uploaded.

What should you do?

- ☐ Copy blobs to Container2 by using the **Put Blob** operation of the Blob Service REST API
- ☐ Create an **Event Grid** topic that uses the Start-AzureStorageBlobCopy cmdlet
- ☐ Use AzCopy with the Snapshot switch to copy blobs to Container2
- ☐ Download the blob to a virtual machine and then upload the blob to Container2

Question 71

You are developing an ASP.NET Core website that uses Azure FrontDoor. The website is used to build custom weather data sets for researchers. Data sets are downloaded by users as Comma Separated Value (CSV) files. The data is refreshed every 10 hours.

Specific files must be purged from the FrontDoor cache based upon Response Header values.

You need to purge individual assets from the Front Door cache.

Which type of cache purge should you use?

- ☐ single path
- ☐ wildcard
- ☐ root domain

Question 72

Your company is developing an Azure API.

You need to implement authentication for the Azure API. You have the following requirements:

- All API calls must be secure.
- Callers to the API must not send credentials to the API.

Which authentication mechanism should you use?

- ☐ Basic
- ☐ Anonymous
- ☐ Managed identity
- ☐ Client certificate

Question 73

You are a developer for a SaaS company that offers many web services.

All web services for the company must meet the following requirements:

- Use API Management to access the services
- Use OpenID Connect for authentication
- Prevent anonymous usage

A recent security audit found that several web services can be called without any authentication.

Which API Management policy should you implement?

- ☐ jsonp
- ☐ authentication-certificate
- ☐ check-header
- ☐ validate-jwt

Question 74

DRAG DROP

Contoso, Ltd. provides an API to customers by using Azure API Management (APIM). The API authorizes users with a JWT token.

You must implement response caching for the APIM gateway. The caching mechanism must detect the user ID of the client that accesses data for a given location and cache the response for that user ID.

You need to add the following policies to the policies file:

- a set-variable policy to store the detected user identity
- a cache-lookup-value policy
- a cache-store-value policy
- a find-and-replace policy to update the response body with the user profile information

To which policy section should you add the policies? To answer, drag the appropriate sections to the correct policies. Each section may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Answer Area

Policy section	Policy	Policy section
	Set-variable	
Inbound	Cache-lookup-value	
Outbound	Cache-store-value	
	Find-and-replace	

Question 75

DRAG DROP

You develop a web application.

You need to register the application with an active Azure Active Directory (Azure AD) tenant.

Which three actions should you perform in sequence? To answer, move all actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Select **Manifest** from the middle-tier service registration.

In Enterprise Applications, select **New application**.

Add a Cryptographic key.

Create a new application and provide the name, account type, and redirect URI.

Select the Azure AD instance.

Use an access token to access the secure resource.

In App Registrations, select **New registration**.

Answer Area



Question 76

You have a new Azure subscription. You are developing an internal website for employees to view sensitive data. The website uses Azure Active Directory (Azure AD) for authentication.

You need to implement multifactor authentication for the website.

Which two actions should you perform? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ Configure the website to use Azure AD B2C.
- ☐ In Azure AD, create a new conditional access policy.
- ☐ Upgrade to Azure AD Premium.
- ☐ In Azure AD, enable application proxy.
- ☐ In Azure AD conditional access, enable the baseline policy.

Question 77

You are developing a Java application that uses Cassandra to store key and value data. You plan to use a new Azure Cosmos DB resource and the Cassandra API in the application. You create an Azure Active Directory (Azure AD) group named **Cosmos DB Creators** to enable provisioning of Azure Cosmos accounts, databases, and containers.

The Azure AD group must not be able to access the keys that are required to access the data.

You need to restrict access to the Azure AD group.

Which role-based access control should you use?

- ☐ DocumentDB Accounts Contributor
- ☐ Cosmos Backup Operator
- ☐ Cosmos DB Operator
- ☐ Cosmos DB Account Reader

Question 78

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.

You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.

You need to configure authorization.

Solution: Configure the Azure Web App for the website to allow only authenticated requests and require Azure AD log on.

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 79

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.

You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.

You need to configure authorization.

Solution:

- Create a new Azure AD application. In the application's manifest, set value of the groupMembershipClaims option to **All**.

- In the website, use the value of the groups claim from the JWT for the user to determine permissions.

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 80

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a website that will run as an Azure Web App. Users will authenticate by using their Azure Active Directory (Azure AD) credentials.

You plan to assign users one of the following permission levels for the website: admin, normal, and reader. A user's Azure AD group membership must be used to determine the permission level.

You need to configure authorization.

Solution:

- Create a new Azure AD application. In the application's manifest, define application roles that match the required permission levels for the application.
- Assign the appropriate Azure AD group to each role. In the website, use the value of the roles claim from the JWT for the user to determine permissions.

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 81

DRAG DROP

You are developing an application to securely transfer data between on-premises file systems and Azure Blob storage. The application stores keys, secrets, and certificates in Azure Key Vault. The application uses the Azure Key Vault APIs.

The application must allow recovery of an accidental deletion of the key vault or key vault objects. Key vault objects must be retained for 90 days after deletion.

You need to protect the key vault and key vault objects.

Which Azure Key Vault feature should you use? To answer, drag the appropriate features to the correct actions. Each feature may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Features	Answer Area
Access policy	
Purge protection	
Soft delete	
Shared access signature	

Action	Feature
Enable retention period and accidental deletion.	Feature
Enforce retention period and accidental deletion.	Feature

Question 82

You provide an Azure API Management managed web service to clients. The back-end web service implements HTTP Strict Transport Security (HSTS).

Every request to the backend service must include a valid HTTP authorization header.

You need to configure the Azure API Management instance with an authentication policy.

Which two policies can you use? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- ☐ Basic Authentication
- ☐ Digest Authentication
- ☐ Certificate Authentication
- ☐ OAuth Client Credential Grant

Question 83

DRAG DROP

You are developing an ASP.NET Core website that can be used to manage photographs which are stored in Azure Blob Storage containers.

Users of the website authenticate by using their Azure Active Directory (Azure AD) credentials.

You implement role-based access control (RBAC) role permissions on the containers that store photographs. You assign users to RBAC roles.

You need to configure the website's Azure AD Application so that user's permissions can be used with the Azure Blob containers.

How should you configure the application? To answer, drag the appropriate setting to the correct location. Each setting can be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Settings	Answer Area		
client_id			
profile			
delegated			
application			
user_impersonation			

API	Permission	Type
Azure Storage	Setting	Setting
Microsoft Graph	User.Read	Setting

Question 84

HOTSPOT

You are developing an ASP.NET Core app that includes feature flags which are managed by Azure App Configuration. You create an Azure App Configuration store named **AppFeatureFlagStore** that contains a feature flag named Export.

You need to update the app to meet the following requirements:

- Use the Export feature in the app without requiring a restart of the app.
- Validate users before users are allowed access to secure resources.
- Permit users to access secure resources.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```

public void Configure(IApplicationBuilder app, IWebHostEnvironment env)
{
    if (env.IsDevelopment())
    {
        app.UseDeveloperExceptionPage();
    }
    else
    {
        app.UseExceptionHandler("/Error");
    }

    app. [v] ();

    app. [v] ();

    app. [v] ();

    app.UseEndpoint(endpoints =>
    {
        endpoints.MapRazorPages();
    });
}

```

Dropdown 1 options: UseAuthentication, UseStaticFiles, UseSession, UseCookiePolicy

Dropdown 2 options: UseAuthorization, UseHttpsRedirection, UseSession, UseCookiePolicy

Dropdown 3 options: UseAzureAppConfiguration, UseRequestLocalization, UseCors, UseStaticFiles

Question 85

You have an application that includes an Azure Web app and several Azure Function apps. Application secrets including connection strings and certificates are stored in Azure Key Vault.

Secrets must not be stored in the application or application runtime environment. Changes to Azure Active Directory (Azure AD) must be minimized.

You need to design the approach to loading application secrets.

What should you do?

- ☐ Create a single user-assigned Managed Identity with permission to access Key Vault and configure each App Service to use that Managed Identity.
- ☐ Create a single Azure AD Service Principal with permission to access Key Vault and use a client secret from within the App Services to access Key Vault.
- ☐ Create a system assigned Managed Identity in each App Service with permission to access Key Vault.
- ☐ Create an Azure AD Service Principal with Permissions to access Key Vault for each App Service and use a certificate from within the App Services to access Key Vault.

Question 86

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a medical records document management website. The website is used to store scanned copies of patient intake forms.

If the stored intake forms are downloaded from storage by a third party, the contents of the forms must not be compromised.

You need to store the intake forms according to the requirements.

Solution:

1. Create an Azure Key Vault key named **skey**.
2. Encrypt the intake forms using the public key portion of **skey**.
3. Store the encrypted data in Azure Blob storage.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 87

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a medical records document management website. The website is used to store scanned copies of patient intake forms.

If the stored intake forms are downloaded from storage by a third party, the contents of the forms must not be compromised.

You need to store the intake forms according to the requirements.

Solution:

1. Create an Azure Cosmos DB database with Storage Service Encryption enabled.
2. Store the intake forms in the Azure Cosmos DB database.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 88

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing a medical records document management website. The website is used to store scanned copies of patient intake forms.

If the stored intake forms are downloaded from storage by a third party, the contents of the forms must not be compromised.

You need to store the intake forms according to the requirements.

Solution: Store the intake forms as Azure Key Vault secrets.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Monitor, troubleshoot, and optimize Azure solutions (16 questions)

Case Study (1 questions)

Case study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

To answer the questions included in a case study, you will need to reference information that is provided in the case study. Case studies might contain exhibits and other resources that provide more information about the scenario that is described in the case study. Each question is independent of the other questions in this case study.

At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the **Question** button to return to the question.

Background

Overview

You are a developer for Contoso, Ltd. The company has a social networking website that is developed as a Single Page Application (SPA). The main web application for the social networking website loads user uploaded content from blob storage.

You are developing a solution to monitor uploaded data for inappropriate content. The following process occurs when users upload content by using the SPA:

- Messages are sent to ContentUploadService.
- Content is processed by ContentAnalysisService.
- After processing is complete, the content is posted to the social network or a rejection message is posted in its place.

The ContentAnalysisService is deployed with Azure Container Instances from a private Azure Container Registry named contosoimages.

The solution will use eight CPU cores.

Azure Active Directory

Contoso, Ltd. uses Azure Active Directory (Azure AD) for both internal and guest accounts.

Requirements

ContentAnalysisService

The company's data science group built ContentAnalysisService which accepts user generated content as a string and returns a probable value for inappropriate content. Any values over a specific threshold must be reviewed by an employee of Contoso, Ltd.

You must create an Azure Function named CheckUserContent to perform the content checks.

Costs

You must minimize costs for all Azure services.

Manual review

To review content, the user must authenticate to the website portion of the ContentAnalysisService using their Azure AD credentials. The website is built using React and all pages and API endpoints require authentication. In order to review content a user must be part of a ContentReviewer role. All completed reviews must include the reviewer's email address for auditing purposes.

High availability

All services must run in multiple regions. The failure of any service in a region must not impact overall application availability.

Monitoring

An alert must be raised if the ContentUploadService uses more than 80 percent of available CPU cores.

Security

You have the following security requirements:

```

CS01 apiVersion: '2018-10-01'
CS02 type: Microsoft.ContainerInstance/containerGroups
CS03 location: westus
CS04 name: contentUploadService
CS05 properties:
CS06   containers:
CS07     - name: service
CS08       properties:
CS09         image: contoso/contentUploadService:latest
CS10         ports:
CS11           - port: 80
CS12             protocol: TCP
CS13         resources:
CS14           requests:
CS15             cpu: 1.0
CS16             memoryInGB: 1.5
CS17
CS18 ipAddress:
CS19   ip: 10.23.121.112
CS20   ports:
CS21     - port: 80
CS22       protocol: TCP
CS23
CS24
CS25 networkProfile:
CS26
id: /subscriptions/98...19/resourceGroups/container/providers/Microsoft.Network/networkProfiles/subnet

AM01 {
AM02   "id" : "2b079f03-9b06-2d44-98bb-e9182901fcb6",
AM03   "appId" : "7118a7f0-b5c2-4c9d-833c-3d711396fe65",
AM04
AM05   "createdDateTime" : "2019-12-24T06:01:44Z",
AM06   "logoUrl" : null,
AM07   "logoutUrl" : null,
AM08   "name" : "ContentAnalysisService",
AM09
AM10
AM11   "orgRestrictions" : [],
AM12   "parentalControlSettings" : {
AM13     "countriesBlockedForMinors" : [],
AM14     "legalAgeGroupRule" : "Allow"
AM15   },
AM16   "passwordCredentials" : []
AM17 }

```

- Any web service accessible over the Internet must be protected from cross site scripting attacks.
- All websites and services must use SSL from a valid root certificate authority.
- Azure Storage access keys must only be stored in memory and must be available only to the service.
- All Internal services must only be accessible from internal Virtual Networks (VNETs).
- All parts of the system must support inbound and outbound traffic restrictions.
- All service calls must be authenticated by using Azure AD.

User agreements

When a user submits content, they must agree to a user agreement. The agreement allows employees of Contoso, Ltd. to review content, store cookies on user devices, and track user's IP addresses.

Information regarding agreements is used by multiple divisions within Contoso, Ltd.

User responses must not be lost and must be available to all parties regardless of individual service uptime. The volume of agreements is expected to be in the millions per hour.

Validation testing

When a new version of the ContentAnalysisService is available the previous seven days of content must be processed with the new version to verify that the new version does not significantly deviate from the old version.

Issues

Users of the ContentUploadService report that they occasionally see HTTP 502 responses on specific pages.

Code

ContentUploadService

Question 89

You need to monitor ContentUploadService according to the requirements.

Which command should you use?

- ☐ `az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "avg Percentage CPU > 8"`
- ☐ `az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "avg Percentage CPU > 800"`
- ☐ `az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "CPU Usage > 800"`
- ☐ `az monitor metrics alert create -n alert -g ... - -scopes ... - -condition "CPU Usage > 8"`

Case Study (2 questions)

Case study

This is a case study. **Case studies are not timed separately. You can use as much exam time as you would like to complete each case.** However, there may be additional case studies and sections on this exam. You must manage your time to ensure that you are able to complete all questions included on this exam in the time provided.

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At the end of this case study, a review screen will appear. This screen allows you to review your answers and to make changes before you move to the next section of the exam. After you begin a new section, you cannot return to this section.

To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the **Question** button to return to the question.

Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

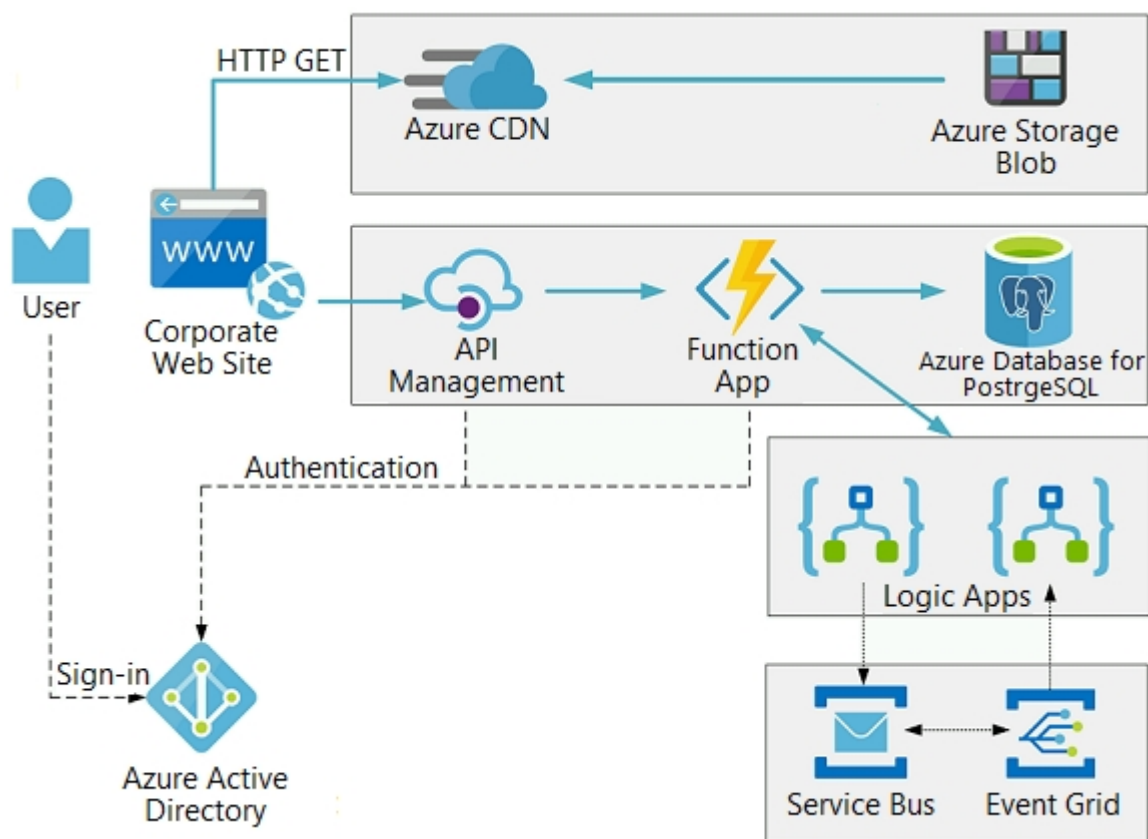
The company has a public website located at <http://www.cpandl.com/>. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

```

SC01 public class Security
SC02 {
SC03     var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04     var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05     var certName = cert.FriendlyName;
SC06 }
  
```

Function app

RequestUserApproval.cs:

```

RA01 public static class RequestUserApproval
RA02 {
RA03     [FunctionName("RequestUserApproval")]
RA04     public static async Task<IActionResult> Run(
RA05         [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req,
RA06         ILogger log)
RA07     {
RA08         log.LogInformation("RequestUserApproval function processed a request.");
RA09         ...
RA10         return ProcessRequest(req)
RA11             ? (ActionResult)new OkObjectResult($"User approval processed")
RA12             : new BadRequestObjectResult("Failed to process user approval");
RA13     }
RA14     private static bool ProcessRequest(HttpRequest req)
RA15     {
RA16         ...
RA17     }
  
```

1. The user selects **Sign in** in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Requirements

Corporate website

- Communications and content must be secured by using SSL.
- Communications must use HTTPS.
- Data must be replicated to a secondary region and three availability zones.
- Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

- Azure Key Vault name: cpandlkeyvault
- Secret name: PostgreSQLConn
- Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

- Azure Event Grid must use Azure Service Bus for queue-based load leveling.
- Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
- Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

- All SSL certificates and credentials must be stored in Azure Key Vault.
- File access must restrict access by IP, protocol, and Azure AD rights.
- All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

```
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
```

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

```
FunctionAppLogs  
| where FunctionName == "RequestUserApproval"
```

Logic app

You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

Question 90

You need to investigate the Azure Function app error message in the development environment.

What should you do?

- ☐ Connect Live Metrics Stream from Application Insights to the Azure Function app and filter the metrics.
- ☐ Create a new Azure Log Analytics workspace and instrument the Azure Function app with Application Insights.
- ☐ Update the Azure Function app with extension methods from Microsoft.Extensions.Logging to log events by using the log instance.

- ☐ Add a new diagnostic setting to the Azure Function app to send logs to Log Analytics.

Question 91

HOTSPOT

You need to configure security and compliance for the corporate website files.

Which Azure Blob storage settings should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Action	Setting
Restrict file access	role-based access control (RBAC) managed identity shared access signature (SAS) token connection string
Enable file auditing	access tier change feed blob indexer storage account type

Case Study (4 questions)

Case study

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Background

You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

Requirements

Policy service

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies

Log policy

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15♦days.

Authentication events

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

PolicyLib

You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

EventGridController.cs

```

EG01 public class EventGridController : Controller
EG02 {
EG03     public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04     public IActionResult Process([FromBody] string eventsJson)
EG05     {
EG06         var events = JObject.Parse(eventsJson);
EG07
EG08         foreach (var @event in events)
EG09         {
EG10             EventId.Value = @event["id"].ToString();
EG11             if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12             {
EG13                 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14             }
EG15
EG16             {
EG17                 EnsureLogging(@event["subject"].ToString());
EG18             }
EG19         }
EG20         return null;
EG21     }
EG22     private void EnsureLogging(string resource)
EG23     {
EG24         . . .
EG25     }
EG26     private async Task SendToAnomalyDetectionService(string uri)
EG27     {
EG28         var content = GetLogData(uri);
EG29         var scoreRequest = new
EG30         {
EG31             Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32             {
EG33                 {
EG34                     "input1",
EG35                     new List<Dictionary<string, string>>()
EG36                     {
EG37                         new Dictionary<string, string>()
EG38                         {
EG39                             {
EG40                                 "logcontent", content
EG41                             }
EG42                         }
EG43                     }
EG44                 },
EG45             },
EG46             GlobalParameters = new Dictionary<string, string>() { }
EG47         };
EG48         var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49         var rawModelResult = await result.Content.ReadAsStringAsync();
EG50         var modelResult = JObject.Parse(rawModelResult);
EG51         if (modelResult["notify"].HasValues)
EG52         {
EG53             . . .
EG54         }
EG55     }
EG56     private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57     {

```

LoginEvent.cs

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```
LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04     public string subject { get; set; }
LE05     public DateTime eventTime { get; set; }
LE06     public Dictionary<string, string> data { get; set; }
LE07     public string Serialize()
LE08     {
LE09         return JsonConvert.SerializeObject(this);
LE10     }
LE11 }
```

- Exclude non-user actions from Application Insights telemetry.
- Provide methods that allow a web service to scale itself.
- Ensure that scaling actions do not disrupt application usage.

Other**Anomaly detection service**

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring

All web applications and services have health monitoring at the /health service endpoint.

Issues**Policy loss**

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

Performance issue

When under heavy load, the anomaly detection service undergoes slowdowns and rejects

connections.

Notification latency

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

App code

EventGridController.cs

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

Question 92

DRAG DROP

You need to implement the Log policy.

How should you complete the Azure Event Grid subscription? To answer, drag the appropriate JSON segments to the correct locations. Each JSON segment may be used once, more than once, or not at all. You may need to drag the split bar between panes to view content.

NOTE: Each correct selection is worth one point.

Code segment

All
WebHook
EventHub
subjectEndsWith
Microsoft.Storage
subjectBeginsWith
Microsoft.Storage.BlobCreated

Answer Area

```
{
  "name": "newlogs",
  "properties": {
    "topic": "/subscriptions/. . ./providers/Microsoft.EventGrid/topics/. . .",
    "destination": {
      "endpointType": "code segment",
      "filter": {
        "code segment": "/blobServices/default/containers/logdrop/",
        "includedEventTypes": [ "code segment" ] },
    },
    "labels": [],
    "eventDeliverySchema": "EventGridSchema"
  }
}
```

Question 93

You need to ensure that the solution can meet the scaling requirements for Policy Service.

Which Azure Application Insights data model should you use?

- ☐ an Application Insights dependency
- ☐ an Application Insights event
- ☐ an Application Insights trace
- ☐ an Application Insights metric

Question 94

DRAG DROP

You need to implement telemetry for non-user actions.

How should you complete the Filter class? To answer, drag the appropriate code segments to the correct locations. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Code segments

- /health
- /status
- RequestTelemetry
- PageViewTelemetry
- ITelemetryProcessor
- ITelemetryInitializer

Answer Area

```
public class Filter : 
{
    private readonly  _next;
    public (Filter  next)
    {
        _next = next;
    }
    public void Process(ITelemetry item)
    {
        var x = item as  ;
        if (x?.Url.AbsolutePath == "")
        {
            return;
        }
        _next.Process(item);
    }
}
```

Question 95

DRAG DROP

You need to ensure that PolicyLib requirements are met.

How should you complete the code segment? To answer, drag the appropriate code segments to the correct locations. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Code segments	Answer Area
Process	<pre> public class IncludeEventId : code segment { public void code segment (ITelemetry telemetry) { code segment.Properties["EventId"] = code segment; } } </pre>
Initialize	
telemetry.Sequence	
ITelemetryProcessor	
ITelemetryInitializer	
telemetry.Context	
EventGridController.EventId.Value	
((EventTelemetry)telemetry).Properties["EventId"]	

Question 96

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution. Determine whether the solution meets the stated goals.

You are developing and deploying several ASP.NET web applications to Azure App Service. You plan to save session state information and HTML output.

You must use a storage mechanism with the following requirements:

- Share session state across all ASP.NET web applications.
- Support controlled, concurrent access to the same session state data for multiple readers and a single writer.
- Save full HTTP responses for concurrent requests.

You need to store the information.

Proposed Solution: Deploy and configure Azure Cache for Redis. Update the web applications.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 97

HOTSPOT

You are debugging an application that is running on Azure Kubernetes cluster named cluster1. The cluster uses Azure Monitor for containers to monitor the cluster.

The application has sticky sessions enabled on the ingress controller.

Some customers report a large number of errors in the application over the last 24 hours.

You need to determine on which virtual machines (VMs) the errors are occurring.

How should you complete the Azure Monitor query? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```

let startTimestamp =  ▼ ;
                    ago(1d)
                    since(1d)
                    totimespan(1d)
                    date(now() - 1d)

let ContainerIDs = KubePodInventory
| where ClusterName == "Cluster1"
|  ▼ ;
  top ContainerID
  union ContainerID
  sample ContainerID
  distinct ContainerID

ContainerLog
|  ▼
  fork containerIDs
  where ContainerID in (ContainerIDs)
  restrict ContainerID in (ContainerIDs)
  join ContainerID == ContainerIDs.ContainerID

| where TimeGenerated > startTimestamp
| where LogEntrySource == "stderr"
|  ▼
  project by Computer
  summarize by Computer
  partition count() by Computer
  summarize count() by Computer

```

Question 98

HOTSPOT

You plan to deploy a web app to App Service on Linux. You create an App Service plan. You create and push a custom Docker image that contains the web app to Azure Container Registry.

You need to access the console logs generated from inside the container in real-time.

How should you complete the Azure CLI command? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

az webapp log --name ContosoWeb --resource-group ContosoDevRG

config
download
show
tail

filesystem

--web-server-logging
--docker-container-logging
--application-logging

az log --name ContosoWeb --resource-group ContosoDevRG

webapp
acr
aks

config
download
show
tail

Question 99

You develop and deploy an ASP.NET web app to Azure App Service. You use Application Insights telemetry to monitor the app.

You must test the app to ensure that the app is available and responsive from various points around the world and at regular intervals. If the app is not responding, you must send an alert to support staff.

You need to configure a test for the web app.

Which two test types can you use? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- ☐ integration
- ☐ multi-step web
- ☐ URL ping
- ☐ unit
- ☐ load

Question 100

DRAG DROP

A web service provides customer summary information for e-commerce partners. The web service is implemented as an Azure Function app with an HTTP trigger. Access to the API is provided by an Azure API Management instance. The API Management instance is configured in consumption plan mode. All API calls are authenticated by using OAuth.

API calls must be cached. Customers must not be able to view cached data for other customers.

You need to configure API Management policies for caching.

How should you complete the policy statement?

Targets

Expect

Public

Private

Internal

External

Authorization

Answer Area

```

<policies>
<inbound>
<base />
<cache-lookup caching-type="
Target
"
downstream-caching-type = "
Target
">

<vary-by-header>
Target
</vary-by-header>
</cache-lookup>
</inbound>
</policies>

```

Question 101

You are developing an ASP.NET Core Web API web service. The web service uses Azure Application Insights for all telemetry and dependency tracking. The web service reads and writes data to a database other than Microsoft SQL Server.

You need to ensure that dependency tracking works for calls to the third-party database.

Which two dependency telemetry properties should you use? Each correct answer presents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ Telemetry.Context.Cloud.RoleInstance
- ☐ Telemetry.Id
- ☐ Telemetry.Name
- ☐ Telemetry.Context.Operation.Id
- ☐ Telemetry.Context.Session.Id

Question 102

HOTSPOT

You are using Azure Front Door Service.

You are expecting inbound files to be compressed by using Brotli compression. You discover that inbound XML files are not compressed. The files are 9 megabytes (MB) in size.

You need to determine the root cause for the issue.

To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Statement	Yes	No
The file MIME type is supported by the service.	☐	☐
Edge nodes must be purged of all cache assets.	☐	☐
The compression type is supported.	☐	☐

Question 103

HOTSPOT

You are developing an Azure App Service hosted ASP.NET Core web app to deliver video-on-demand streaming media. You enable an Azure Content Delivery Network (CDN) Standard for the web endpoint. Customer videos are downloaded from the web app by using the following example URL: `http://www.contoso.com/content.mp4?quality=1`

All media content must expire from the cache after one hour. Customer videos with varying quality must be delivered to the closest regional point of presence (POP) node.

You need to configure Azure CDN caching rules.

Which options should you use? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

Setting	Action
Caching behavior	Bypass cache Override Set if missing
Cache expiration duration	1 second 1 minute 1 hour 1 day
Query string caching behavior	Ignore query strings Bypass caching for query strings Cache every unique URL

Question 104

DRAG DROP

You develop a web app that uses tier D1 app service plan by using the Web Apps feature of Microsoft Azure App Service.

Spikes in traffic have caused increases in page load times.

You need to ensure that the web app automatically scales when CPU load is about 85 percent and minimize costs.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

NOTE: More than one order of answer choices is correct. You will receive credit for any of the correct orders you select.

Actions		Answer Area
Configure the web app to the Premium App Service tier.		
Configure the web app to the Standard App Service tier.		
Enable autoscaling on the web app.	⬅	⬆
Add a Scale rule.	➡	⬇
Switch to an Azure App Services consumption plan.		
Configure a Scale condition.		

Question 105

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution. Determine whether the solution meets the stated goals.

You are developing and deploying several ASP.NET web applications to Azure App Service. You plan to save session state information and HTML output.

You must use a storage mechanism with the following requirements:

- Share session state across all ASP.NET web applications.
- Support controlled, concurrent access to the same session state data for multiple readers and a single writer.
- Save full HTTP responses for concurrent requests.

You need to store the information.

Proposed Solution: Enable Application Request Routing (ARR).

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 106

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution. Determine whether the solution meets the stated goals.

You are developing and deploying several ASP.NET web applications to Azure App Service. You plan to save session state information and HTML output.

You must use a storage mechanism with the following requirements:

- Share session state across all ASP.NET web applications.
- Support controlled, concurrent access to the same session state data for multiple readers and a single writer.
- Save full HTTP responses for concurrent requests.

You need to store the information.

Proposed Solution: Deploy and configure an Azure Database for PostgreSQL. Update the web applications.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 107

HOTSPOT

A company is developing a gaming platform. Users can join teams to play online and see leaderboards that include player statistics. The solution includes an entity named Team.

You plan to implement an Azure Redis Cache instance to improve the efficiency of data operations for entities that rarely change.

You need to invalidate the cache when team data is changed.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
void ClearCachedTeams()
```

```
{
```

```
    IDatabase cache = Connection.GetDatabase();  
    ICache cache = Connection.GetDatabase();
```

```
    cache.KeyDelete("Team");  
    cache.StringSet("Team", "");  
    cache.ValueDelete("Team");  
    cache.StringGet("Team", "");
```

```
    ViewBag.msg += "Team data removed from cache.";
```

```
}
```

Question 108

DRAG DROP

A company has multiple warehouse. Each warehouse contains IoT temperature devices which deliver temperature data to an Azure Service Bus queue.

You need to send email alerts to facility supervisors immediately if the temperature at a warehouse goes above or below specified threshold temperatures.

Which five actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Add a logic app trigger that fires when one or more messages arrive in the queue.

Add a Recurrence trigger that schedules the app to run every 15 minutes.

Add an action that sends an email to specified personnel if the temperature is outside of those thresholds.

Add a trigger that reads IoT temperature data from a Service Bus queue.

Add a logic app action that fires when one or more messages arrive in the queue.

Add a condition that compares the temperature against the upper and lower thresholds.

Create a blank Logic app.

Add an action that reads IoT temperature data from the Service Bus queue.

Answer Area

Question 109

DRAG DROP

You develop an ASP.NET Core MVC application. You configure the application to track webpages and custom events.

You need to identify trends in application usage.

Which Azure Application Insights Usage Analysis features should you use? To answer, drag the appropriate features to the correct requirements. Each feature may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Features	Requirement	Feature
Users	Which pages visited by users most often correlate to a product purchase?	Feature
Funnels	How does load time of the product display page affect a user's decision to purchase a product?	Feature
Impact	Which events most influence a user's decision to continue to use the application?	Feature
Retention	Are there places in the application that users often perform repetitive actions?	Feature
User Flows		

Question 110

You develop a gateway solution for a public facing news API. The news API back end is implemented as a RESTful service and uses an OpenAPI specification.

You need to ensure that you can access the news API by using an Azure API Management service instance.

Which Azure PowerShell command should you run?

- ☐ `Import-AzureRmApiManagementApi -Context $ApiMgmtContext -SpecificationFormat "Swagger" -SpecificationPath $SwaggerPath -Path $Path`
- ☐ `New-AzureRmApiManagementBackend -Context $ApiMgmtContext -Url $Url -Protocol http`
- ☐ `New-AzureRmApiManagement -ResourceGroupName $ResourceGroup -Name $Name -Location $Location -Organization $Org -AdminEmail $AdminEmail`
- ☐ `New-AzureRmApiManagementBackendProxy -Url $ApiUrl`

Question 111

You are creating a hazard notification system that has a single signaling server which triggers audio and visual alarms to start and stop.

You implement Azure Service Bus to publish alarms. Each alarm controller uses Azure Service Bus to receive alarm signals as part of a transaction. Alarm events must be recorded for audit purposes. Each transaction record must include information about the alarm type that was activated.

You need to implement a reply trail auditing solution.

Which two actions should you perform? Each correct answer resents part of the solution.

NOTE: Each correct selection is worth one point.

- ☐ Assign the value of the hazard message SessionID property to the ReplyToSessionId property.
- ☐ Assign the value of the hazard message MessageId property to the DeliveryCount property.
- ☐ Assign the value of the hazard message SessionID property to the SequenceNumber property.
- ☐ Assign the value of the hazard message MessageId property to the CorrelationId property.
- ☐ Assign the value of the hazard message SequenceNumber property to the DeliveryCount property.
- ☐ Assign the value of the hazard message MessageId property to the SequenceNumber property.

Connect to and consume Azure services and third-party services (21 questions)

Case Study (2 questions)

Case study

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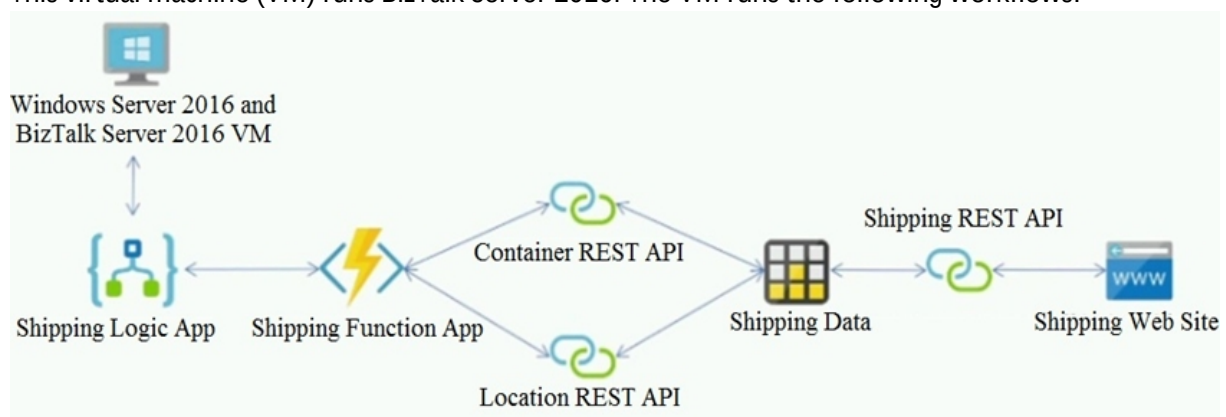
To start the case study

To display the first question in this case study, click the **Next** button. Use the buttons in the left pane to explore the content of the case study before you answer the questions. Clicking these buttons displays information such as business requirements, existing environment, and problem statements. When you are ready to answer a question, click the **Question** button to return to the question.

Current environment

Windows Server 2016 virtual machine

This virtual machine (VM) runs BizTalk Server 2016. The VM runs the following workflows:



Requirements

Shipping Logic app

The Shipping Logic app must meet the following requirements:

- Support the ocean transport and inland transport workflows by using a Logic App.

- Support industry-standard protocol X12 message format for various messages including vessel content details and arrival notices.
- Secure resources to the corporate VNet and use dedicated storage resources with a fixed costing model.
- Maintain on-premises connectivity to support legacy applications and final BizTalk migrations.

Shipping Function app

Implement secure function endpoints by using app-level security and include Azure Active Directory (Azure AD).

REST APIs

The REST API's that support the solution must meet the following requirements:

- Secure resources to the corporate VNet.
- Allow deployment to a testing location within Azure while not incurring additional costs.
- Automatically scale to double capacity during peak shipping times while not causing application downtime.
- Minimize costs when selecting an Azure payment model.

Shipping data

Data migration from on-premises to Azure must minimize costs and downtime.

Shipping website

Use Azure Content Delivery Network (CDN) and ensure maximum performance for dynamic content while minimizing latency and costs.

Issues

Windows Server 2016 VM

The VM shows high network latency, jitter, and high CPU utilization. The VM is critical and has not been backed up in the past. The VM must enable a quick restore from a 7-day snapshot to include in-place restore of disks in case of failure.

Shipping website and REST APIs

The following error message displays while you are testing the website:

```
Failed to load http://test-shippingapi.wideworldimporters.com/: No 'Access-Control-Allow-Origin' header is present on the requested resource. Origin 'http://test.wideworldimporters.com/' is therefore not allowed access.
```

- Ocean Transport – This workflow gathers and validates container information including container contents and arrival notices at various shipping ports.
- Inland Transport – This workflow gathers and validates trucking information including fuel usage, number of stops, and routes.

The VM supports the following REST API calls:

- Container API – This API provides container information including weight, contents, and other attributes.
- Location API – This API provides location information regarding shipping ports of call and trucking stops.
- Shipping REST API – This API provides shipping information for use and display on the shipping website.

Shipping Data

The application uses MongoDB JSON document storage database for all container and transport information.

Shipping Web Site

The site displays shipping container tracking information and container contents. The site is located at <http://shipping.wideworldimporters.com/>

Proposed solution

The on-premises shipping application must be moved to Azure. The VM has been migrated to a new Standard_D16s_v3 Azure VM by using Azure Site Recovery and must remain running in Azure to complete the BizTalk component migrations. You create a Standard_D16s_v3 Azure VM to host BizTalk Server. The Azure architecture diagram for the proposed solution is shown below:

Question 112

DRAG DROP

You need to support the message processing for the ocean transport workflow.

Which four actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

Link the Logic App to the integration account.

Add partners, schemas, certificates, maps, and agreements.

Update the Logic App to use the partners, schemas, certificates, maps, and agreements.

Create a custom connector for the Logic App.

Link the custom connector to the Logic App.

Create an integration account in the Azure portal.

Answer Area



Question 113

You need to support the requirements for the Shipping Logic App.

What should you use?

- ☐ Azure Active Directory Application Proxy
- ☐ Site-to-Site (S2S) VPN connection
- ☐ On-premises Data Gateway
- ☐ Point-to-Site (P2S) VPN connection

Case Study (2 questions)

Case study

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Background

City Power & Light company provides electrical infrastructure monitoring solutions for homes and businesses. The company is migrating solutions to Azure.

Current environment

Architecture overview

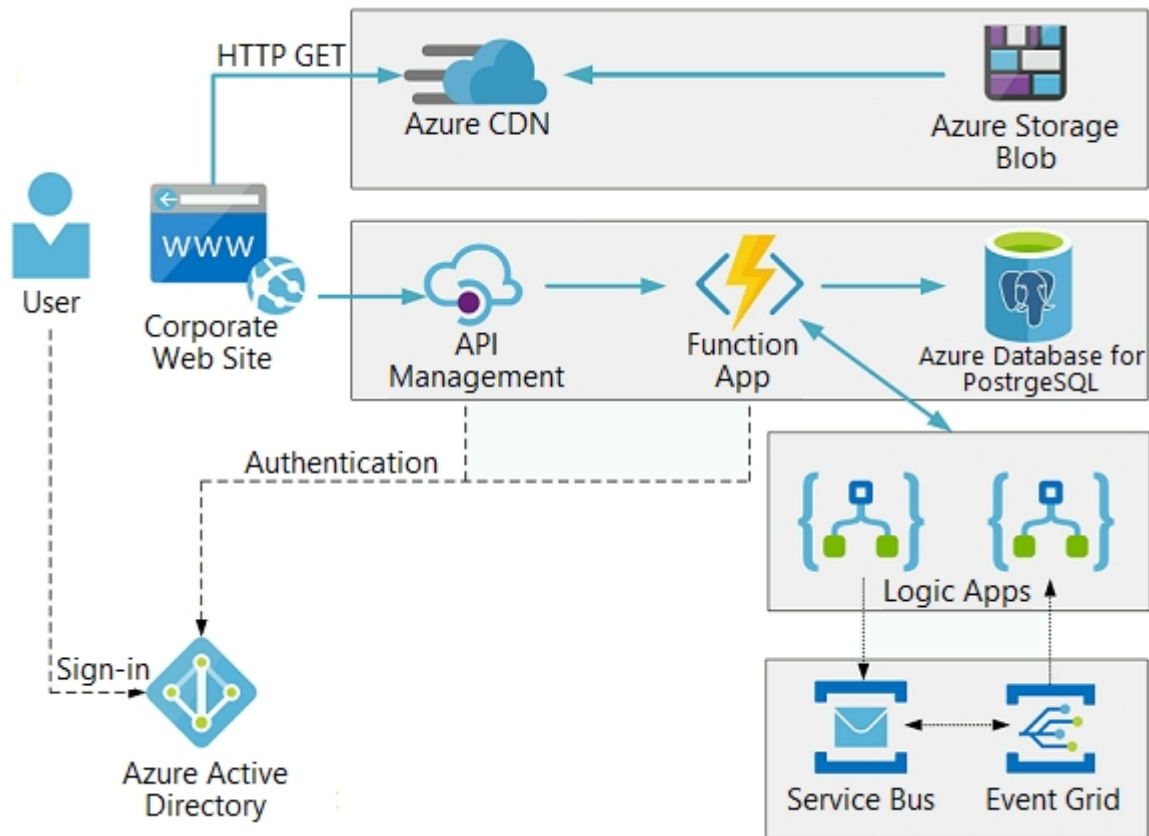
The company has a public website located at <http://www.cpandl.com/>. The site is a single-page web application that runs in Azure App Service on Linux. The website uses files stored in Azure Storage and cached in Azure Content Delivery Network (CDN) to serve static content.

API Management and Azure Function App functions are used to process and store data in Azure Database for PostgreSQL. API Management is used to broker communications to the Azure Function app functions for Logic app integration. Logic apps are used to orchestrate the data processing while Service Bus and Event Grid handle messaging and events.

The solution uses Application Insights, Azure Monitor, and Azure Key Vault.

Architecture diagram

The company has several applications and services that support their business. The company plans to implement serverless computing where possible. The overall architecture is shown below.



User authentication

The following steps detail the user authentication process:

```
SC01 public class Security
SC02 {
SC03     var bytes = System.IO.File.ReadAllBytes("~/var/ssl/private");
SC04     var cert = new System.Security.Cryptography.X509Certificate2(bytes);
SC05     var certName = cert.FriendlyName;
SC06 }
```

Function app

RequestUserApproval.cs:

```

RA01 public static class RequestUserApproval
RA02 {
RA03     [FunctionName("RequestUserApproval")]
RA04     public static async Task<IActionResult> Run(
RA05     [HttpTrigger(AuthorizationLevel.Function, "get", "post", Route = null)] HttpRequest req,
RA06     ILogger log)
RA07     {
RA08         log.LogInformation("RequestUserApproval function processed a request.");
RA09         ...
RA10         return ProcessRequest(req)
RA11         ? (ActionResult)new OkObjectResult($"User approval processed")
RA12         : new BadRequestObjectResult("Failed to process user approval");
RA13     }
RA14     private static bool ProcessRequest(HttpRequest req)
RA15     {
RA16         ...
RA17     }

```

1. The user selects **Sign in** in the website.
2. The browser redirects the user to the Azure Active Directory (Azure AD) sign in page.
3. The user signs in.
4. Azure AD redirects the user's session back to the web application. The URL includes an access token.
5. The web application calls an API and includes the access token in the authentication header. The application ID is sent as the audience ('aud') claim in the access token.
6. The back-end API validates the access token.

Requirements

Corporate website

- Communications and content must be secured by using SSL.
- Communications must use HTTPS.
- Data must be replicated to a secondary region and three availability zones.
- Data storage costs must be minimized.

Azure Database for PostgreSQL

The database connection string is stored in Azure Key Vault with the following attributes:

- Azure Key Vault name: cpandlkeyvault
- Secret name: PostgreSQLConn
- Id: 80df3e46ffcd4f1cb187f79905e9a1e8

The connection information is updated frequently. The application must always use the latest information to connect to the database.

Azure Service Bus and Azure Event Grid

- Azure Event Grid must use Azure Service Bus for queue-based load leveling.
- Events in Azure Event Grid must be routed directly to Service Bus queues for use in buffering.
- Events from Azure Service Bus and other Azure services must continue to be routed to Azure Event Grid for processing.

Security

- All SSL certificates and credentials must be stored in Azure Key Vault.
- File access must restrict access by IP, protocol, and Azure AD rights.
- All user accounts and processes must receive only those privileges which are essential to perform their intended function.

Compliance

Auditing of the file updates and transfers must be enabled to comply with General Data Protection Regulation (GDPR). The file updates must be read-only, stored in the order in which they occurred, include only create, update, delete, and copy operations, and be retained for compliance reasons.

Issues

Corporate website

While testing the site, the following error message displays:
CryptographicException: The system cannot find the file specified.

Function app

You perform local testing for the RequestUserApproval function. The following error message displays:

```
'Timeout value of 00:10:00 exceeded by function: RequestUserApproval'
```

The same error message displays when you test the function in an Azure development environment when you run the following Kusto query:

```
FunctionAppLogs
| where FunctionName == "RequestUserApproval"
```

Logic app

You test the Logic app in a development environment. The following error message displays:
'400 Bad Request'

Troubleshooting of the error shows an HttpTrigger action to call the RequestUserApproval function.

Code

Corporate website

Security.cs:

Question 114

HOTSPOT

You need to configure the integration for Azure Service Bus and Azure Event Grid.

How should you complete the CLI statement? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

az create --source-resource-id \$topicid --name \$name --

eventgrid
servicebus

event-subscription
topic
queue

endpoint-type --endpoint \$endpoint

webhook
eventhub
servicebusqueue

Question 115

You need to ensure that all messages from Azure Event Grid are processed.

What should you use?

- ☐ Azure Event Grid topic
- ☐ Azure Service Bus topic
- ☐ Azure Service Bus queue
- ☐ Azure Storage queue
- ☐ Azure Logic App custom connector

Case Study (3 questions)

Case study

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To start the case study

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Background

You are a developer for Proseware, Inc. You are developing an application that applies a set of governance policies for Proseware's internal services, external services, and applications. The application will also provide a shared library for common functionality.

Requirements

Policy service

You develop and deploy a stateful ASP.NET Core 2.1 web application named Policy service to an Azure App Service Web App. The application reacts to events from Azure Event Grid and performs policy actions based on those events.

The application must include the Event Grid Event ID field in all Application Insights telemetry.

Policy service must use Application Insights to automatically scale with the number of policy actions that it is performing.

Policies

Log policy

All Azure App Service Web Apps must write logs to Azure Blob storage. All log files should be saved to a container named logdrop. Logs must remain in the container for 15♦days.

Authentication events

Authentication events are used to monitor users signing in and signing out. All authentication events must be processed by Policy service. Sign outs must be processed as quickly as possible.

PolicyLib

You have a shared library named PolicyLib that contains functionality common to all ASP.NET Core web services and applications. The PolicyLib library must:

EventGridController.cs

```

EG01 public class EventGridController : Controller
EG02 {
EG03     public static AsyncLocal<string> EventId = new AsyncLocal<string>();
EG04     public IActionResult Process([FromBody] string eventsJson)
EG05     {
EG06         var events = JObject.Parse(eventsJson);
EG07
EG08         foreach (var @event in events)
EG09         {
EG10             EventId.Value = @event["id"].ToString();
EG11             if (@event["topic"].ToString().Contains("providers/Microsoft.Storage"))
EG12             {
EG13                 SendToAnomalyDetectionService(@event["data"]["url"].ToString());
EG14             }
EG15
EG16             {
EG17                 EnsureLogging(@event["subject"].ToString());
EG18             }
EG19         }
EG20         return null;
EG21     }
EG22     private void EnsureLogging(string resource)
EG23     {
EG24         . . .
EG25     }
EG26     private async Task SendToAnomalyDetectionService(string uri)
EG27     {
EG28         var content = GetLogData(uri);
EG29         var scoreRequest = new
EG30         {
EG31             Inputs = new Dictionary<string, List<Dictionary<string, string>>>()
EG32             {
EG33                 {
EG34                     "input1",
EG35                     new List<Dictionary<string, string>>()
EG36                     {
EG37                         new Dictionary<string, string>()
EG38                         {
EG39                             {
EG40                                 "logcontent", content
EG41                             }
EG42                         }
EG43                     }
EG44                 },
EG45             },
EG46             GlobalParameters = new Dictionary<string, string>() { }
EG47         };
EG48         var result = await (new HttpClient()).PostAsJsonAsync("...", scoreRequest);
EG49         var rawModelResult = await result.Content.ReadAsStringAsync();
EG50         var modelResult = JObject.Parse(rawModelResult);
EG51         if (modelResult["notify"].HasValues)
EG52         {
EG53             . . .
EG54         }
EG55     }
EG56     private (string name, string resourceGroup) ParseResourceId(string resourceId)
EG57     {
EG58         . . .
EG59     }
EG60     private string GetLogData(string uri)

```

LoginEvent.cs

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

```

LoginEvent.cs
LE01 public class LoginEvent
LE02 {
LE03
LE04     public string subject { get; set; }
LE05     public DateTime eventTime { get; set; }
LE06     public Dictionary<string, string> data { get; set; }
LE07     public string Serialize()
LE08     {
LE09         return JsonConvert.SerializeObject(this);
LE10     }
LE11 }

```

- Exclude non-user actions from Application Insights telemetry.
- Provide methods that allow a web service to scale itself.
- Ensure that scaling actions do not disrupt application usage.

Other**Anomaly detection service**

You have an anomaly detection service that analyzes log information for anomalies. It is implemented as an Azure Machine Learning model. The model is deployed as a web service. If an anomaly is detected, an Azure Function that emails administrators is called by using an HTTP WebHook.

Health monitoring

All web applications and services have health monitoring at the /health service endpoint.

Issues**Policy loss**

When you deploy Policy service, policies may not be applied if they were in the process of being applied during the deployment.

Performance issue

When under heavy load, the anomaly detection service undergoes slowdowns and rejects

connections.

Notification latency

Users report that anomaly detection emails can sometimes arrive several minutes after an anomaly is detected.

App code

EventGridController.cs

Relevant portions of the app files are shown below. Line numbers are included for reference only and include a two-character prefix that denotes the specific file to which they belong.

Question 116

DRAG DROP

You need to add code at line EG15 in EventGridController.cs to ensure that the Log policy applies to all services.

How should you complete the code? To answer, drag the appropriate code segments to the correct locations. Each code segment may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Code segments

- topic
- status
- eventType
- Succeeded
- operationName
- resourceProvider

Answer Area

```
if {  
  @event[ "data" ][ " code segment " ].ToString() == " code segment "  
  &&  
  @event[ "data" ][ " code segment " ].ToString() == "Microsoft.Web/sites/write"  
}
```

Question 117

HOTSPOT

You need to insert code at line LE03 of LoginEvent.cs to ensure that all authentication events are processed correctly.

How should you complete the code? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

`public string` ▼ (`get; set;`)

id
eventType
dataVersion
metadataVersion

`public string` ▼ (`get; set;`)

id
eventType
dataVersion
metadataVersion

`public string` ▼ (`get; set;`)

id
eventType
dataVersion
metadataVersion

Question 118

HOTSPOT

You need to implement the Log policy.

How should you complete the EnsureLogging method in EventGridController.cs? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```

var client = new WebSiteManagementClient(. . .);
var id = ParseResourceID(resource);
var appSettings = new StringDictionary(name: "properties",
    properties: new Dictionary<string, string> {
        {"DIAGNOSTICS_AZUREBLOBCONTAINERSASURL", BlobStoreAccountSAS("
        {
            {"DIAGNOSTICS_AZUREBLOBRETENTIONINDAYS", "
        }
    });
client.WebApps.
    id.resourceGroup,
    id.name, appSettings);

```

Hotspot 1: Select the correct SAS URL type from the dropdown menu.

Hotspot 2: Select the correct retention period from the dropdown menu.

Hotspot 3: Select the correct action from the dropdown menu.

Question 119

HOTSPOT

You are working for Contoso, Ltd.

You define an API Policy object by using the following XML markup:

```
<set-variable name= "bodySize" value="@{context.Request.Headers["Content-Length"] [0]}" />
<choose>
  <when condition= "@(int.Parse(context.Variables.GetValueOrDefault<string> ("bodySize"))<512000)">
</when>
<otherwise>
  <rewrite-uri template= "/put"/>
  <set-backend-service base-url= "http://contoso.com/api/9.1/" />
</otherwise>
</choose>
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Answer Area

Statement	Yes	No
The XML segment belongs in the <inbound> section of the policy.	☐	☐
If the body size is >256k, an error will occur.	☐	☐
If the request is http://contoso.com/api/9.2/, the policy will retain the higher version.	☐	☐

Question 120

You are developing a solution that will use Azure messaging services.

You need to ensure that the solution uses a publish-subscribe model and eliminates the need for constant polling.

What are two possible ways to achieve the goal? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- ☐ Service Bus
- ☐ Event Hub
- ☐ Event Grid
- ☐ Queue

Question 121

A company is implementing a publish-subscribe (Pub/Sub) messaging component by using Azure Service Bus. You are developing the first subscription application.

In the Azure portal you see that messages are being sent to the subscription for each topic. You create and initialize a subscription client object by supplying the correct details, but the subscription application is still not consuming the messages.

You need to ensure that the subscription client processes all messages.

Which code segment should you use?

- ☐ `await subscriptionClient.AddRuleAsync(new RuleDescription(RuleDescription.DefaultRuleName, new TrueFilter()));`
- ☐ `subscriptionClient = new SubscriptionClient(ServiceBusConnectionString, TopicName, SubscriptionName);`
- ☐ `await subscriptionClient.CloseAsync();`
- ☐ `subscriptionClient.RegisterMessageHandler(ProcessMessagesAsync, messageHandlerOptions);`

Question 122

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.

You have the following requirements:

- Queue size must not grow larger than 80 gigabytes (GB).
- Use first-in-first-out (FIFO) ordering of messages.
- Minimize Azure costs.

You need to implement the messaging solution.

Solution: Use the .Net API to add a message to an Azure Storage Queue from the mobile application. Create an Azure VM that is triggered from Azure Storage Queue events.

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 123

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

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You have the following requirements:

- Queue size must not grow larger than 80 gigabytes (GB).
- Use first-in-first-out (FIFO) ordering of messages.
- Minimize Azure costs.

You need to implement the messaging solution.

Solution: Use the .Net API to add a message to an Azure Service Bus Queue from the mobile application. Create an Azure Windows VM that is triggered from Azure Service Bus Queue.

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 124

DRAG DROP

You have an application that provides weather forecasting data to external partners. You use Azure API Management to publish APIs.

You must change the behavior of the API to meet the following requirements:

- Support alternative input parameters
- Remove formatting text from responses
- Provide additional context to back-end services

Which types of policies should you implement? To answer, drag the policy types to the correct scenarios. Each policy type may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Policy types		Requirement	Policy type
Inbound		Rewrite the request URL to match to the format expected by the web service.	policy type
Outbound		Remove formatting text from responses.	policy type
Backend		Forward the user ID that is associated with the subscription key for the original request to the back-end service.	policy type

Question 125

You are developing an e-commerce solution that uses a microservice architecture.

You need to design a communication backplane for communicating transactional messages between various parts of the solution. Messages must be communicated in first-in-first-out (FIFO) order.

What should you use?

- ☐ Azure Storage Queue
- ☐ Azure Event Hub
- ☐ Azure Service Bus
- ☐ Azure Event Grid

Question 126

DRAG DROP

A company backs up all manufacturing data to Azure Blob Storage. Admins move blobs from hot storage to archive tier storage every month.

You must automatically move blobs to Archive tier after they have not been modified within 180 days. The path for any item that is not archived must be placed in an existing queue. This operation must be performed automatically once a month. You set the value of TierAgeInDays to **-180**.

How should you configure the Logic App? To answer, drag the appropriate triggers or action blocks to the correct trigger or action slots. Each trigger or action block may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Triggers and action blocks

Insert Entity

Table

processing

Entity

Path

Tier blob

If blob is older than the defined value, tier it to Cool or Archive tier.

Blob path

Path

Blob tier

Archive

When there are messages in a queue

Queue Name

processing

Recurrence

Interval

1

Frequency

Month

List blobs 2

Folder

/items

Condition

Check LastModified timestamp and whether older than the tier age variable

ticks(items(For_each?), [LastModified])

is less than

ticks(addDaysInMonth(), variables(TierAgeInDays))

Put a message on a queue

Queue Name

processing

Message

Path

Answer area

trigger or action block

Set tier age variable

List blobs

For each

Scan all blobs in this folder

Select an output from previous steps

value

trigger or action block

If true

trigger or action block

Add an action

If false

trigger or action block

Add an action

Add an action

trigger or action block

169

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Question 127

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You have the following requirements:

- Queue size must not grow larger than 80 gigabytes (GB).
- Use first-in-first-out (FIFO) ordering of messages.
- Minimize Azure costs.

You need to implement the messaging solution.

Solution: Use the .Net API to add a message to an Azure Service Bus Queue from the mobile application. Create an Azure Function App that uses an Azure Service Bus Queue trigger.

Does the solution meet the goal?

- ☐ Yes
☐ No

Question 128

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

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You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.

You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.

You need to implement a solution to receive the device data.

Solution: Provision an Azure Notification Hub. Register all devices with the hub.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 129

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

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You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.

You need to implement a solution to receive the device data.

Solution: Provision an Azure Service Bus. Configure a topic to receive the device data by using a correlation filter.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 130

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing an Azure solution to collect point-of-sale (POS) device data from 2,000 stores located throughout the world. A single device can produce 2 megabytes (MB) of data every 24 hours. Each store location has one to five devices that send data.

You must store the device data in Azure Blob storage. Device data must be correlated based on a device identifier. Additional stores are expected to open in the future.

You need to implement a solution to receive the device data.

Solution: Provision an Azure Event Grid. Configure event filtering to evaluate the device identifier.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 131

DRAG DROP

You manage several existing Logic Apps.

You need to change definitions, add new logic, and optimize these apps on a regular basis.

What should you use? To answer, drag the appropriate tools to the correct functionalities. Each tool may be used once, more than once, or not at all. You may need to drag the split bar between panes or scroll to view content.

NOTE: Each correct selection is worth one point.

Answer Area

Tools	Functionality	Tool
Logic Apps Designer	Edit B2B workflows	
Code View Editor	Edit definitions in JSON	
Enterprise Integration Pack	Visually add functionality	

Question 132

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- ☐ `az servicebus queue create`
`--resource-group fridge-rg`
`--namespace-name fridge-ns`
`--name fridge-q`
- ☐ `New-AzureRmResourceGroup`
`-Name fridge-rg`
`-Location fridge-loc`
- ☐ `az servicebus namespace create`
`--resource-group fridge-rg`
`--name fridge-ns`
`--location fridge-loc`
- ☐ `connectionString-$)az serviceBus namespace authorization-rule keys list`
`--resource-group fridge-rg`
`--fridge-ns fridge-ns`
`--query primaryConnectionString -output tsv)`

Question 133

HOTSPOT

You are developing an application that uses Azure Storage Queues.

You have the following code:

```
CloudStorageAccount storageAccount = CloudStorageAccount.Parse
(CloudConfigurationManager.GetSetting("StorageConnectionString"));
CloudQueueClient queueClient = storageAccount.CreateCloudQueueClient();

CloudQueue queue = queueClient.GetQueueReference("appqueue");
await queue.CreateIfNotExistsAsync();

CloudQueueMessage peekedMessage = await queue.PeekMessageAsync();
if (peekedMessage != null)
{
    Console.WriteLine("The peeked message is: {0}", peekedMessage.AsString);
}
CloudQueueMessage message = await queue.GetMessageAsync() ;
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Answer Area

Statement	Yes	No
The code configures the lock duration for the queue.	☐	☐
The last message read remains in the queue after the code runs.	☐	☐
The storage queue remains in the storage account after the code runs.	☐	☐

Question 134

A company is developing a solution that allows smart refrigerators to send temperature information to a central location.

The solution must receive and store messages until they can be processed. You create an Azure Service Bus instance by providing a name, pricing tier, subscription, resource group, and location.

You need to complete the configuration.

Which Azure CLI or PowerShell command should you run?

- ☐ `az group create`
`--name fridge-rg`
`--location fridge-loc`
- ☐ `New-AzureRmServiceBusNamespace`
`-ResourceGroupName fridge-rg`
`-NamespaceName fridge-ns`
`-Location fridge-loc`
- ☐ `New-AzureRmServiceBusQueue`
`-ResourceGroupName fridge-rg`
`-NamespaceName fridge-ns`
`-Name fridge-q`
`-EnablePartitioning $False`
- ☐ `Get-AzureRmServiceBusKey`
`-ResourceGroupName fridge-rg`
`-Namespace fridge-ns`
`-Name RootManageSharedAccessKey`

Question 135

Note: This question is part of a series of questions that present the same scenario. Each question in the series contains a unique solution that might meet the stated goals. Some question sets might have more than one correct solution, while others might not have a correct solution.

After you answer a question in this section, you will NOT be able to return to it. As a result, these questions will not appear in the review screen.

You are developing an Azure Service application that processes queue data when it receives a message from a mobile application. Messages may not be sent to the service consistently.

You have the following requirements:

- Queue size must not grow larger than 80 gigabytes (GB).
- Use first-in-first-out (FIFO) ordering of messages.
- Minimize Azure costs.

You need to implement the messaging solution.

Solution: Use the .Net API to add a message to an Azure Storage Queue from the mobile application. Create an Azure Function App that uses an Azure Storage Queue trigger.

Does the solution meet the goal?

- ☐ Yes
- ☐ No

Question 136

DRAG DROP

You develop software solutions for a mobile delivery service. You are developing a mobile app that users can use to order from a restaurant in their area. The app uses the following workflow:

1. A driver selects the restaurants from which they will deliver orders.
2. Orders are sent to all available drivers in an area.
3. Only orders for the selected restaurants will appear for the driver.
4. The first driver to accept an order removes it from the list of available orders.

You need to implement an Azure Service Bus solution.

Which three actions should you perform in sequence? To answer, move the appropriate actions from the list of actions to the answer area and arrange them in the correct order.

Actions

- Create a single Service Bus topic.
- Create a Service Bus Namespace for each restaurant for which a driver can receive messages.
- Create a single Service Bus subscription.
- Create a Service Bus subscription for each restaurant for which a driver can receive orders.
- Create a single Service Bus Namespace.
- Create a Service Bus topic for each restaurant for which a driver can receive messages.

Answer Area

Question 137

HOTSPOT

You develop a news and blog content app for Windows devices.

A notification must arrive on a user's device when there is a new article available for them to view.

You need to implement push notifications.

How should you complete the code segment? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Answer Area

```
string notificationHubName = "contoso_hub";
string notificationHubConnection = "connection_string";
    hub =
    NotificationHubClient
    NotificationHubClientSettings
    NotificationHubJob
    NotificationDetails
    .
    GetInstallation
    CreateClientFromConnectionString
    CreateOrUpdateInstallation
    PatchInstallation
(notificationHubConnection, notificationHubName);
string windowsToastPayload =
    @"<toast><visual><binding template=""ToastText01""><text id=""1"">" +
    @"New item to view" + @"</text></binding></visual></toast>";
try
{
    var result =
        await hub.
            SendWindowsNativeNotificationAsync
            SubmitNotificationHubJobAsync
            ScheduleNotificationAsync
            SendAppleNativeNotificationAsync
            ...
}
catch (System.Exception ex)
{
    ...
}
...
```

Question 138

You are developing an Azure messaging solution.

You need to ensure that the solution meets the following requirements:

- Provide transactional support.
- Provide duplicate detection.
- Store the messages for an unlimited period of time.

Which two technologies will meet the requirements? Each correct answer presents a complete solution.

NOTE: Each correct selection is worth one point.

- ☐ Azure Service Bus Topic
- ☐ Azure Service Bus Queue
- ☐ Azure Storage Queue
- ☐ Azure Event Hub

Question 139

HOTSPOT

You are developing an application that uses Azure Storage Queues.

You have the following code:

```
CloudStorageAccount storageAccount = CloudStorageAccount.Parse
(CloudConfigurationManager.GetSetting("StorageConnectionString"));
CloudQueueClient queueClient = storageAccount.CreateCloudQueueClient();

CloudQueue queue = queueClient.GetQueueReference("appqueue");
await queue.CreateIfNotExistsAsync();

CloudQueueMessage peekedMessage = await queue.PeekMessageAsync();
if (peekedMessage != null)
{
    Console.WriteLine("The peeked message is: {0}", peekedMessage.AsString);
}
CloudQueueMessage message = await queue.GetMessageAsync() ;
```

For each of the following statements, select Yes if the statement is true. Otherwise, select No.

NOTE: Each correct selection is worth one point.

Answer Area

Statement	Yes	No
The code configures the lock duration for the queue.	☐	☐
The last message is no longer visible in the queue after the code runs.	☐	☐
The storage queue remains in the storage account after the code runs.	☐	☐