



AZ-400^{Q&As}

Designing and Implementing Microsoft DevOps Solutions

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QUESTION 1

DRAG DROP

You have an Azure subscription that uses Azure Monitor and contains a Log Analytics workspace.

You have an encryption key.

You need to configure Azure Monitor to use the key to encrypt log data.

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.

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

Select and Place:

Actions	Answer Area
Configure the key vault properties for the cluster	
Link the Log Analytics workspace to the cluster	
Grant the system-assigned managed identity Key permissions for the key vault	>
Grant the system-assigned managed identity Certificate permissions for the key vault	<
Create an Azure Monitor Logs dedicated cluster that has a system-assigned managed identity	
Create an Azure key vault and store the key	

Correct Answer:

Actions	Answer Area
	Create an Azure key vault and store the key
	Create an Azure Monitor Logs dedicated cluster that has a system-assigned managed identity
	Grant the system-assigned managed identity Key permissions for the key vault
Grant the system-assigned managed identity Certificate permissions for the key vault	>
	<
	Configure the key vault properties for the cluster
	Link the Log Analytics workspace to the cluster

QUESTION 2



You manage projects by using Azure Boards.

You have a current work item name itemA that is dependant on a work item named itemB.

You need to define the dependency for itemA.

What should you do in the web portal for Azure DevOps?

A. Add a Parent link to the user story of itemA.

B. From Backlogs, open the context menu, select Add link, and then select itemA. Set Link type to References and add the ID of itemB.

C. From itemA, open the Links tab, and then select Add link. Set Link type to References and add the ID of itemB.

D. From itemA, open the Links tab, and then select Add link. Set Link type to Successor and add the ID of itemB.

Correct Answer: D

Dependencies can be created from the Links Tab Dependencies can be created using the Predecessor and Successor links on the Links tab. A predecessor is the producer of the work item, or the item that must come first. A successor is the consumer of the work item, or the item that is dependent on the first item.

Reference: <https://learn.microsoft.com/en-us/azure/devops/extensions/dependency-tracker/create-new-dependency>

QUESTION 3

You have a project in Azure DevOps.

You create the following YAML template named Template1.yml.

steps:

-

script: npm install

-

script: yarn install

-

script: npm run compile

You create the following pipeline named File1.yml.

parameters:usersteps:

-task: MyTask@1

-script: echo Done

You need to ensure that Template1.yml runs before File1.yml.



How should you update File1.yml?

A. parameters: usersteps: extends: template: template1.yml

-task: MyTask@1 - script: echo Done

B. template: template1.yml parameters: usersteps:

-task: MyTask@1 - script: echo Done

C. extends: template: templatel.yml parameters: usersteps:

-task: MyTask@1 - script: echo Done

D. parameters: usersteps: - template: templatel.yml

-task: MyTask@1 - script: echo Done

Correct Answer: C

Azure Pipelines offers two kinds of templates: includes and extends. Included templates behave like #include in C++: it's as if you paste the template's code right into the outer file, which references it. To continue the C++ metaphor, extends templates are more like inheritance: the template provides the outer structure of the pipeline and a set of places where the template consumer can make targeted alterations.

Example:

```
extends: template: template.yml@templates parameters:
```

```
  usersteps:
```

```
  -
```

```
    script: echo This is my first step
```

```
  -
```

```
    script: echo This is my second step
```

Reference: <https://docs.microsoft.com/en-us/azure/devops/pipelines/security/templates>

QUESTION 4

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.

Your company has a project in Azure DevOps for a new web application.

You need to ensure that when code is checked in, a build runs automatically.



Solution: From the Pre-deployment conditions settings of the release pipeline, you select Batch changes while a build is in progress.

Does this meet the goal?

A. Yes

B. No

Correct Answer: B

Instead, In Visual Designer you enable continuous integration (CI) by:

1.

Select the Triggers tab.

2.

Enable Continuous integration.

References: <https://docs.microsoft.com/en-us/azure/devops/pipelines/get-started-designer>

QUESTION 5

HOTSPOT

Where should the build and release agents for the investment planning application suite run? To answer, select the appropriate options in the answer area.

NOTE: Each correct selection is worth one point.

Hot Area:



Answer Area

Build agent:

- A hosted service
- A source control system
- The developers' computers

Release agent:

- A hosted service
- A source control system
- The developers' computers

Correct Answer:

Answer Area

Build agent:

- A hosted service
- A source control system
- The developers' computers

Release agent:

- A hosted service
- A source control system
- The developers' computers

Box 1: A source control system

A source control system, also called a version control system, allows developers to collaborate on code and track changes. Source control is an essential tool for multi-developer projects.

Box 2: A hosted service

To build and deploy Xcode apps or Xamarin.iOS projects, you'll need at least one macOS agent. If your pipelines are in Azure Pipelines and a Microsoft-hosted agent meets your needs, you can skip setting up a self-hosted macOS agent.



Scenario: The investment planning applications suite will include one multi-tier web application and two iOS mobile applications. One mobile application will be used by employees; the other will be used by customers.

References:

<https://docs.microsoft.com/en-us/azure/devops/pipelines/agents/v2-osx?view=azure-devops>

QUESTION 6

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 have an approval process that contains a condition. The condition requires that releases be approved by a team leader before they are deployed.

You have a policy stating that approvals must occur within eight hours.

You discover that deployment fail if the approvals take longer than two hours.

You need to ensure that the deployments only fail if the approvals take longer than eight hours.

Solution: From Post-deployment conditions, you modify the Timeout setting for post-deployment approvals.

Does this meet the goal?

A. Yes

B. No

Correct Answer: B

Use Pre-deployments conditions instead. Use a gate instead of an approval instead.

References: <https://docs.microsoft.com/en-us/azure/devops/pipelines/release/approvals/gates>

QUESTION 7

You use Azure Pipelines to build and test code projects.

You notice an increase in cycle times.

You need to identify whether agent pool exhaustion is causing the issue.

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

NOTE: Each correct selection is worth one point.



- A. Query the PipelineRun/PipelineRunsendpoint.
- B. Query the TaskAgentPoolSizeSnapshotsendpoint.
- C. View the Pipeline duration report.
- D. View the pool consumption report at the organization level.

Correct Answer: BD

B: TaskAgentPoolSizeSnapshot/TaskAgentPoolSizeSnapshots (Composite)

Supports understanding of pool size, pipeline jobs, and concurrency. The Historical graph for agent pools illustrates how this entity set can be used.

D: The pool consumption report enables you to view jobs running in your agent pools graphed with agent pool job concurrency over a span of up to 30 days. You can use this information to help decide whether your jobs aren't running

because of concurrency limits. If you have many jobs queued or running jobs at the concurrency or online agents limit, you may wish to purchase additional parallel jobs or provision more self-hosted agents.

Report scope

The pool consumption report can be displayed at organization scope, or project scope. At the organization level, the chart is plotted using data from pipelines across any project within the organization that have run jobs in that pool. At the

project level, the chart is plotted using data from pipelines in that particular project that have run jobs in that pool.

Incorrect:

Not A: PipelineRun/

PipelineRuns

Execution information for pipelines. For a sample report, see Pipeline pass rate trend sample report.

Not C: The Pipeline duration report shows how long your pipeline typically takes to complete successfully. You can review the duration trend and analyze the top tasks by duration to optimize the duration of the pipeline.

Reference: <https://learn.microsoft.com/en-us/azure/devops/pipelines/agents/pool-consumption-report> <https://github.com/MicrosoftDocs/azure-devops-docs/blob/main/docs/report/extend-analytics/data-model-analytics-service.md>

QUESTION 8

Your company develops an application named App1 that is deployed in production.

As part of an application update, a new service is being added to App1. The new service requires access to an application named App2 that is currently in development.

You need to ensure that you can deploy the update to App1 before App2 becomes available. You must be able to enable the service in App1 once App2 is deployed.



What should you do?

- A. Implement a feature flag.
- B. Create a fork in the build.
- C. Create a branch in the build.
- D. Implement a branch policy.

Correct Answer: A

Feature flags support a customer-first DevOps mindset, to enable (expose) and disable (hide) features in a solution, even before they are complete and ready for release. Incorrect Answers:

C: Branch policies are an important part of the Git workflow and enable you to:

1.

Isolate work in progress from the completed work in your master branch

2.

Guarantee changes build before they get to master

Reference: <https://docs.microsoft.com/en-us/azure/devops/migrate/phase-features-with-feature-flags>

QUESTION 9

You use Calendar Versioning (CalVer) for code assets.

You need to store an optional tag of beta as part of the version.

Which part of the version should you use for the tag?

- A. minor
- B. major
- C. micro
- D. modifier

Correct Answer: D

Explanation:

Calendar Versioning

There are multiple calendar versioning schemes, long used by projects big and small. Rather than declaring a single scheme to be CalVer, it's important to recognize the practicality of each and design the scheme to fit the project. First, the

parts of the version:



Major - The first number in the version. 2 and 3 are Python's famous major versions. The major segment is the most common calendar-based component.

Minor - The second number in the version. 7 is the most popular minor version of Python.

Micro - The third and usually final number in the version. Sometimes referred to as the "patch" segment.

Modifier - An optional text tag, such as "dev", "alpha", "beta", "rc1", and so on.

Reference: <https://calver.org/>

QUESTION 10

DRAG DROP

You are configuring the settings of a new Git repository in Azure Repos.

You need to ensure that pull requests in a branch meet the following criteria before they are merged:

1.

Committed code must compile successfully.

2.

Pull requests must have a Quality Gate status of Passed in SonarCloud.

Which policy type should you configure for each requirement? To answer, drag the appropriate policy types to the correct requirements. 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.

Select and Place:

Answer Area

Policy Types

A build policy

A check-in policy

A status policy

Committed code must compile successfully:

Pull requests must have a Quality Gate status
of Passed in SonarCloud:

Correct Answer:



Answer Area

Policy Types

A status policy

Committed code must compile successfully:

A check-in policy

Pull requests must have a Quality Gate status of Passed in SonarCloud:

A build policy

Box 1: A check-in policy

Administrators of Team Foundation version control can add check-in policy requirements. These check-in policies require the user to take actions when they conduct a check-in to source control.

By default, the following check-in policy types are available:

1.

Builds Requires that the last build was successful before a check-in.

2.

Code Analysis Requires that code analysis is run before check-in.

3.

Work Items Requires that one or more work items be associated with the check-in.

Box 2: Build policy

Reference: <https://docs.microsoft.com/en-us/azure/devops/repos/tfvc/add-check-policies>

<https://azuredevopslabs.com/labs/vstsextend/sonarcloud/>

QUESTION 11

Your company builds a multi-tier web application.

You use Azure DevOps and host the production application on Azure virtual machines.

Your team prepares an Azure Resource Manager template of the virtual machine that you will use to test new features.

You need to create a staging environment in Azure that meets the following requirements:

1.

Minimizes the cost of Azure hosting

2.

Provisions the virtual machines automatically



3.

Uses the custom Azure Resource Manager template to provision the virtual machines What should you do?

- A. In Azure Cloud Shell, run Azure CLI commands to create and delete the new virtual machines in a staging resource group.
- B. In Azure DevOps, configure new tasks in the release pipeline to deploy to Azure Cloud Services.
- C. From Azure Cloud Shell, run Azure PowerShell commands to create and delete the new virtual machines in a staging resource group.
- D. In Azure DevOps, configure new tasks in the release pipeline to create and delete the virtual machines in Azure DevTest Labs.

Correct Answer: D

You can use the Azure DevTest Labs Tasks extension that's installed in Azure DevOps to easily integrate your CI/CD build-and-release pipeline with Azure DevTest Labs. The extension installs three tasks:

1.

Create a VM

2.

Create a custom image from a VM

3.

Delete a VM The process makes it easy to, for example, quickly deploy a "golden image" for a specific test task and then delete it when the test is finished. References: <https://docs.microsoft.com/en-us/azure/lab-services/devtest-lab-integrate-ci-cd-vsts>

QUESTION 12

DRAG DROP

Your company has two virtual machines that run Linux in a third-party public cloud. You plan to use the company's Azure Automation State Configuration implementation to manage the two virtual machines and detect configuration drift.

You need to onboard the Linux virtual machines.

You install PowerShell Desired State Configuration (DSC) on the virtual machines, and then run register.py.

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

Select and Place:



Install Windows Management Framework 5.1 on the virtual machines	
From the virtual machines, run <code>setdsclocalconfigurationmanager.py</code> .	
Create a DSC metaconfiguration	
Copy the metaconfiguration to the virtual machines.	
Add the virtual machines as DSC nodes in Azure Automation	

Correct Answer:

Install Windows Management Framework 5.1 on the virtual machines	Create a DSC metaconfiguration
From the virtual machines, run <code>setdsclocalconfigurationmanager.py</code> .	Copy the metaconfiguration to the virtual machines.
	Add the virtual machines as DSC nodes in Azure Automation

Step 1: Create a DSC metaconfiguration

Load up the DSC Configuration into Azure Automation.

Step 2: Copy the metaconfiguration to the virtual machines.

Linking the Node Configuration to the Linux Host

Step 3: Add the virtual machines as DSC nodes in Azure Automation. go to DSC Nodes, select your node, and then click Assign node configuration. This step assigns the DSC configuration to the Linux machine.

Next up will be to link the node configuration to the host. Go to the host and press the "Assign node..."-button. Next up you can select your node configuration.

QUESTION 13

DRAG DROP



You have a project in Azure DevOps.

You need to configure a dashboard. The solution must include the following metrics:

1.

Bottlenecks in the software development process

2.

A burndown chart for the work in a single iteration

3.

How long it takes to close a work item after the item was started

Which type of widget should you use for each metric? To answer, drag the appropriate widget types to the correct metrics. Each widget 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.

Select and Place:

Widgets

Burndown chart

Lead time

Cumulative flow diagram (CFD)

Sprint burndown

Cycle time

Velocity

Answer Area

Bottlenecks in the software development process:

How long it takes to close a work item after the item was started:

A burndown chart for the work in a single iteration:

Correct Answer:



Widgets

Answer Area

Bottlenecks in the software development process:

How long it takes to close a work item after the item was started:

A burndown chart for the work in a single iteration:

Box 1: Burndown chart

Bottlenecks in the software development process

Interpret a burndown or burnup chart

Your team can get immediate insight as to their progress and learn about their rhythm and behavior. Most burndown lines aren't straight lines. The team never moves at exactly one fixed velocity. Scope increases occur over time. For

example, if your projected completion date moves, you may want to ask one of these questions:

Are we adding too much scope?

Is the average burn rate changing, and if so, why?

Burndown charts also help teams understand risks to their release. If the projected end date exceeds the release target date, teams may need to reduce scope or lengthen the project. Burndown can also indicate that progress is greater than expected, providing the uncommon, but wonderful option of adding scope.

As the following diagram shows, charts based on the burndown/burnup widgets provide many calculated elements.

Box 2: Cycle time

How long it takes to close a work item after the item was started

Cycle time measures the time it takes for your team to complete work items once they begin actively working on them.

Box 3: Sprint burndown

A burndown chart for the work in a single iteration



The definition of a sprint is a dedicated period of time in which a set amount of work will be completed on a project. It's part of the agile methodology, and an Agile project will be broken down into a number of sprints, each sprint taking the project closer to completion.

The aim of a sprint is to make progress against the product goal. So the scrum team determines and agrees to a consistent duration for completing work. Most sprints range from two to four weeks — but should not be longer than one month.

Incorrect:

*

Velocity

Velocity metrics provide useful information, so teams can plan and forecast sprints and determine how well they estimate and meet planned commitments. You can get an indication of how much work a team can complete during a sprint

based on either a count of work items completed or the sum of estimates made for effort (product backlog items), story points (user stories), or size (requirements). Use velocity as an aid to determine team capacity and don't confuse it with

key performance indicators.

*

Cumulative flow diagram (CFD)

You use cumulative flow diagrams (CFD) to monitor the flow of work through a system. There are two CFD charts: the in-context report you can view from a team backlog or Kanban board and the CFD widget you can add to a dashboard.

CFDs help teams monitor the count of work items as they progressively move through various workflow states. These diagrams can show the flow of epics, features, user stories, issues, product backlog items, or requirements, depending on the process selected for your project

*

Lead time

Lead time measures the total time elapsed from the creation of work items to their completion.

Reference: <https://learn.microsoft.com/en-us/azure/devops/report/dashboards/cycle-time-and-lead-time>
<https://business.adobe.com/blog/basics/sprints> . <https://learn.microsoft.com/en-us/azure/devops/report/dashboards/configure-sprint-burndown>

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