1. What is Azure DevOps?

The process includes testing automation, continuous integration, as well as continuous delivery.

People with both development and operations skills work together and implement various tools for CI-CD and monitoring for quick response to customer’s requirements and fix issues and bugs.

Azure DevOps is the new name for Microsoft VSTS (Visual Studio Team Services) and an application lifecycle management tool. It helps in project planning through Agile tools and templates. Other functionalities include version control of source code, management and execution of test plans, and management of branches.

Additionally, Azure DevOps also helps in solution deployments across various platforms with the help of Azure Pipelines and allows continuous integration and continuous deployment.

2. Why use DevOps?

Traditional software development always had a slow code deployment time after completion of development. And oftentimes, the Development Team and Operations Team or deployment team would get into arguments regarding its status blaming the server or the code for the issues. This is where DevOps enters with a solution.

DevOps facilitates the delivery of smaller features to clients in a quick and efficient manner and allows seamless software delivery.

3. How does DevOps work?

DevOps is the process of Operations and Development Engineers who work in collaboration in a complete project lifecycle, from the design and development to product releases and support.

4. What are the benefits of DevOps?

The major benefits of DevOps are:

* Customer satisfaction
* More engagement and collaboration between Development and Operation teams
* Faster code deployment in the market through continuous integration and delivery
* Faster operational support
* Higher efficiency
* Strong infrastructure and IT performance
* Continuous improvements and reduced failures
* Transparency between teams
* Constant monitoring and better adaption

5. What are Azure Boards?

Azure Boards is an Azure DevOps service. It helps manage the work in software projects and provides a wide range of functionalities like native support for Kanban and Scrum, customizable dashboards, and integrated reporting. Azure Boards include features like boards, sprints, work items, dashboards, backlogs, queries, etc.

6. What is Azure Repos?

This is a basic Azure DevOps interview question but it can be difficult to answer. Azure Repos is a version control system that can manage the different versions of a code and the code itself throughout the lifecycle of development. It is easy to track any changes in the code made by different teams. It also keeps a detailed record of these changes and the history for better coordination within the team. The changes are then merged at a later stage.

7. What are containers?

Containers provide the means to package software code, its configurations, dependencies, and packages into a single unit or object. Multiple containers can run on the same machine and share OS with other containers for running fast, reliable, and consistent deployments anywhere.

8. What are Azure Pipelines?

Azure DevOps Pipeline automatically develops and tests code projects. It is a service on the Azure cloud that works well with most project types and languages. This service helps in improving the availability of code projects to other users.

9. What are Azure DevOps Projects?

Azure DevOps Project is a simplified way to effectively bring existing code and Git repository for the creation of CI and CD pipeline to Azure.

10. What are the reasons to use CI and CD and Azure pipelines?

Make sure to go through this question as it is one of the important interview questions. Implementing CI and CD pipelines ensure quality and reliable code.

Azure pipelines are there to ensure a secure, easy, and quick way to automate project development processes and availability. They are entirely free for use in public projects and cost-effective for private ones (free 30 hours per month).

Below are a few reasons for using CI/CD and Azure pipelines:

* Supports any platform or language
* Enables work with open-source project>
* Building on Windows, Mac, and Linux machines
* Enables simultaneous deployment to various types of a target
* Integration with GitHub and Azure deployments

11. Which feature can be used for the development of a multi-tier application using Azure App Service web apps as the front end and Azure SQL database as the back end?

The appropriate option, in this case, is Application Map in Azure Application Insights. This is because it helps in identifying the performance bottlenecks as well as the failure hotspots in different components of the multi-tier applications.

Application components and the related dependencies are represented by the nodes on the map. Furthermore, it is also capable of providing the status for health KPI and alerts.

12.What is meant by the pull requests in Azure DevOps Repos?

Pull requests are used for reviewing as well as merging codes to a Git project. Pull requests enable the team to review the code and also provide feedback on it.

13. Tell us something about fault domains.

They are the logical hardware groups that can share the same power source as well as network. They are used for racking the data centers on-premise. These fault domains get automatically distributed by the Azure platform when VMs are designed using available sets. This approach limits network outages, physical hardware failures, etc.

14. Tell us something about the Update domains feature.

They are the logical hardware groups that can be rebooted as well as maintained at the same time. These updated domains get automatically distributed when the VMs are designed using available sets. This ensures our application instance, as well as the running of the Azure platform, is under periodic maintenance. Only a single order of updates can be rebooted at a time.

15. What is VNet?

The rendering of our cloud network refers to the VNet. Our launched cloud instances get isolated from the remaining resources with the help of VNet.

16. Elaborate self-hosted agent in Azure pipeline.

Self-hosted agents allow us to set up as well as management jobs on our own. We opt for self-hosted agents when we want more access to installing dependent software as per our needs and deployments. Also, the speed can be boosted by the persistence of machine-level caches and configuration from run to run.

17. Elaborate Microsoft-hosted agents in the Azure pipeline.

It is the by default Microsoft agents that get the jobs executed. From assigning the resources to installing and maintaining, everything gets done when we opt for this Microsoft-hosted agent.

18. Explain the use of an active directory in Azure.

It is used for access management. It helps in enabling access to the employees to particular products and services of our networks. Some major examples include Salesforce.com and Twitter. Application-built support in galleries is provided by this active directory.

19. Elaborate on the job role of Azure DevOps engineer.

An Azure DevOps engineer is responsible for designing and implementing a scalable, strong, realistic, and practical cloud solution that would work for the clients.

20. Explain the different phases of the DevOps lifecycle.

Azure DevOps interview questions cover every phase of the DevOps lifecycle separately or in a single question. The different phases in the DevOps methodology are:

Plan – The team discusses all the project requirements, like time for each stage, cost, and more.

Code – The software engineers write the small codes, known as units, according to the client's requirements.

Build – Involves the building of the units.

Test – The team tests if there are any mistakes. If yes, it is returned for a rebuild.

Integrate – Involves the integration of all the units of the codes.

Deploy – codeDevOpsNow is deployed on the client's environment.

Operate – Operations are performed on the code.

Monitor – This is the last phase wherein applications are monitored in the client's environment.

21. What is NSG?

NSG stands for Network Security Group that has a list of ACL (Access Control List) rules which either allows/denies network traffic to subnets or NICs (Network Interface Card) connected to a subnet or both.

22. Define Azure virtual machine scale sets

These are the Azure computation resources that can be used to deploy and manage sets of identical Virtual Machines (VMs).

These scale sets are configured in the same manner and are designed to support the autoscaling of the applications without the need for pre-provisioning of the VMs.

They help to build large-scale applications targeting big data and containerized workloads in an easier manner.

23. What do you understand about the “Availability Set”?

Availability Set is nothing but a logical grouping of VMs (Virtual Machines) that allows Azure cloud to understand how the application was developed for providing availability and redundancy.

Each VM in the availability set is assigned 2 kinds of domains by Azure:

Fault Domain: These define the grouping of VMs that would share a common power source and common network switch. The VMs within availability sets are separated across up to 3 fault domains by default. This separation of VMs in fault domains helps our applications to be available by reducing impacts of network outages, power interruptions, and certain hardware failures.

Update Domain: These indicate the grouping of VMs and underlying hardware which are eligible to be rebooted at the same time. Only one update domain can be rebooted at a time, however, the order of reboot does not proceed in a sequential manner. Before the maintenance of another update domain, the previously rebooted domain is given a recovery time of 30 minutes to ensure that the domain is up.

24. What is Azure Blob Storage?

Azure Blob storage is the object storage solution provided by Microsoft for the cloud. Blob stands for “Binary Large Object”. Blob-based storage is used to store massive unstructured data in terms of text or binary format. It is ideal for serving documents/images/audio/video/text directly to browser.

The data stored in the blob storage is accessible from anywhere in the world. The blobs are tied to user accounts by grouping them into containers. The Azure Blob Service has 3 components:

Storage Account: This can be a General Storage Account or Blob Storage Account registered in Microsoft Azure.

Container: Container is used for grouping blobs. We can store an unlimited number of blobs in a container. The name of the container should start in lowercase.

Blob: A blob is a Binary Large Object like a file or document of any type and size. There are 3 kinds of Blobs supported by Azure:

Block blobs: These are intended for text and binary files and can support up to 195GB, i.e up to 50k blocks of up to 4MB each.

Append blobs: These are used for appending operations like logging data in log files.

Page blobs: These are meant for frequent read/write operations.

24. What are IaaS, PaaS and SaaS?

IaaS: This stands for “Infrastructure as a Service” which provides a set of capabilities like OS, network connectivities, etc which are at the infrastructural level and are delivered as pay per use policy. The infrastructure is used for hosting applications. Examples include Azure VM, VNET, etc.

PaaS: PaaS stands for “Platform as a Service” which is mostly about underlying infrastructure abstraction to the developers for enabling quicker development of the applications without the need for worry about hosting management. Examples include Azure web apps, Storage services, cloud services, etc.

SaaS: SaaS stands for “Software as a Service” and are those applications which are delivered using the service delivery model where the applications are simply consumed and used by an organization. These applications are generally mobilized by making the organization pay for their usage or through ads. Examples include applications like Office 365, Gmail, SharePoint Online, and so on.

25. Define Azure Functions in detail.

The Azure Functions is a serverless code computation service that allows you to run code without a server on demand, such as Events and External-Invoke. They are stateless and short-lived, and azure Functions may automatically scale up in response to the request. They tend to speed up the development process by avoiding the need to perform any integration coding for you to connect to other services. They also offer Azure Application Insights for monitoring and evaluating code performance, which aids in the identification of bottlenecks and failure locations throughout the application's components.

26. Explain Service Bus Queue and Storage Queue.

Azure Service Bus Queues belong to the Azure messaging framework and include queuing, publishing, subscribing, etc. They are part of the Service Bus and can pass messages through to other Queues and Topics. The Azure Service Bus Queues feature a built-in dead-letter queue and allow you to choose a timeline for messages so they can last as long as you want them to! They connect applications or parts of applications that cover different communication protocols, data treaties, trust domains, or security protocols.

Azure Storage Queues belong to the Azure storage framework and are easy to use. They allow easy debugging by using the local Azure Storage Emulator. The set of Azure Storage Queue tools enables you to take a quick look at the top 32 messages and visualize the contents of those belonging to XML/JSON right from Visual Studio. Another feature of storage queues that ensures smooth development and QA operations is that the contents of these queues can be emptied when needed. Authenticated HTTP or HTTPS calls allow you to access the queue messages regardless of your geographical location. Queue messages have a maximum capacity of 64 KB and can hold millions of messages depending upon the storage account's overall capacity limit.

27. Can you specify the storage limit associated with a virtual machine?

When it comes to the storage limit associated with virtual machines, each data disk has a maximum capacity of 1 TB. The amount of data disks one can use is determined by the virtual machine's size. Azure Managed Disks is a new and highly recommended disk storage option for Azure Virtual Machines for long-term data storage. Each Virtual Machine can have many Managed Disks. Premium and Standard Managed Disks are two types of long-term storage options offered by Managed Disks. Also, storage for the OS disk and any data disks can be provided via Azure storage accounts. Each disk is a page blob that is stored in a .vhd file format.

28. How does Azure Traffic Manager differ from Azure Load Balancer?

Azure Traffic Manager is mainly responsible for sending traffic globally on the basis of dynamic principles. This leads to an enhanced user experience that reflects how your application is distributed worldwide. Your public endpoints will also experience benefits such as high accessibility and responsiveness. For diverse application objectives and spontaneous recovery systems, Traffic Manager offers a variety of traffic-routing mechanisms and endpoint tracking solutions.

The Azure Load Balancer handles the routing of traffic within a certain region. It is used together with Azure Traffic Manager, which directs traffic to a region between virtual machines. When the two are coupled, you get global traffic control with local backup. The Azure Load Balancer service offers a high-performance, low bandwidth Layer 4 load-balancing solution for all UDP and TCP protocols. It can ensure the smooth handling of millions of queries per second while maintaining high availability.

29. Deine Azure SQL Database?

Azure SQL Database is a fully managed PaaS database server that keeps track of most database management tasks like data upgradations, patching, data backups, etc., without the need for human intervention. Azure SQL Database always runs on the most recent stable version of the Microsoft SQL Server database system, and its built-in PaaS capabilities allow you to concentrate on the domain-specific database management and performance activities that play a major role in upscaling your business. It also enables you to develop a highly accessible and rich in performance data storage layer for Azure apps and solutions.

30. Discuss the different types of backups available in Azure?

To maintain the high availability of your data as well as storage, Azure Backup supports three methods of backup-

i. Locally redundant storage (LRS) copies your data three times in a centralized storage unit within the same region. LRS is a cost-effective option for safeguarding data against local hardware breakdowns.

ii. Geo-redundant storage (GRS) is the standard and preferred backup mode that replicates your data to a secondary region far away from the primary location of the source data. GRS is more expensive than LRS, but it provides greater data resilience, even in the event of a local disruption.

iii. Zone-redundant storage (ZRS) backs up data in availability zones, ensuring data retention and durability in the same zone. You can back up your essential activities that involve data retention and must run without disruption since ZRS has zero latency.

31. What do you mean by Azure Resource Manager Templates (ARM)?

Azure Resource Manager (ARM) templates are JSON files mainly used to implement infrastructure as code for your Azure solutions. The template outlines your project's infrastructure and configuration. A declarative syntax is used in the template, which allows you to declare what you want to deliver without the use of any actual programming/coding. The template must include the resources to launch as well as their attributes.

32. Briefly discuss the Azure Kubernetes Service (AKS).

Azure Kubernetes Service (AKS) aims at the easy installation of a hosted Kubernetes cluster on Azure. It is solely responsible for managing containerized applications. It's an open-source solution for scaling, automatic deployment, and managing traffic. Azure deals with important functions like health diagnosis and management as a managed Kubernetes service. You solely manage and maintain the agent nodes because the Kubernetes masters are controlled by Azure. As a result, AKS is completely free; you only have to pay for the agent nodes in your clusters.

33. What is meant by autoscaling in Azure?

Autoscale is an inbuilt feature of Cloud Services, Virtual Machine Scale Sets, and Websites that enables applications to expand to adapt to changing demand. Scaling out refers to increasing the number of instances in a system. Scaling up in Windows Azure is also possible by using larger role instances rather than additional role instances. You may balance the performance of your Windows Azure application against its operational costs by adding and removing role instances while it is running. The amount of manual work necessary in dynamically scaling an application is reduced with an autoscaling solution.

34. Briefly define SQL Azure firewall.

SQL Azure Firewall is a cloud-based service that enables you to determine IP addresses and filter traffic to a VNet. It is designed for high availability and unlimited cloud scalability, as well as protecting inbound and outbound traffic to the VNet.

SQL Azure firewall is a Microsoft Azure Platform cloud computing database service that allows you to host and access SQL databases.

35. What is Build Pipeline?

The Source Code stored in Repo will be checked for any errors and if there is no error an artifact will be generated in the Drop Folder

36. What is Release Pipeline?

The artifact generated by build pipeline will be deployed to cloud or virtual machine by using the Release pipeline.

37. Explain variable and variable groups in Azure DevOps?

Variables allow you to store some data that can be used across pipelines. All variables are mutable and stored as strings.

Variable Groups provide the ability to use variables across multiple pipelines. You can store secrets in variable or variable groups.

38. Explain git rescan, stage, commit and push?

Rescan: It will check whether there any new code changes done by the programmers.

Stage: All the changes will be staged here.

Commit: All staged changes will be committed here and will be ready for the push into repos.

Push: All the committed changes will be pushed to Azure Repo.

39. What is Service Connection?

Service Connections are used in Azure DevOps Pipelines to connect to external services, like Azure, GitHub, Docker, Kubernetes, and many other services.

40. What is Key vault?

Azure Key Vault is a cloud service for securely storing and accessing secrets. API keys, passwords, certificates

41. What is Deployment Group?

A deployment group is a logical set of deployment target machines that have agents installed on each one. Deployment groups represent the physical environments; for example, "Dev", "Test", or "Production" environment. In effect, a deployment group is just another grouping of agents, much like an agent pool.

42. What is Application Gateway?

Azure Application Gateway is a web traffic load balancer that enables you to manage traffic to your web applications.

43. What are routing methods in traffic manager azure?

* Priority traffic-routing method
* Weighted traffic-routing method
* Performance traffic-routing method
* Geographic traffic-routing method
* Multi value traffic-routing method
* Subnet traffic-routing method

44. What is an application insight in azure?

Application Insights is an extension of Azure Monitor and provides Application Performance Monitoring (also known as “APM”) features. APM tools are useful to monitor applications from development, through test, and into production in the following ways:

* Proactively understand how an application is performing.
* Reactively review application execution data to determine the cause of an incident.

45. What is dns in azure?

Azure DNS is a hosting service for DNS domains that provides name resolution by using Microsoft Azure infrastructure. By hosting your domains in Azure, you can manage your DNS records by using the same credentials, APIs, tools, and billing as your other Azure services.

46. What is SonarCloud?

SonarCloud is a cloud-based code analysis service designed to detect coding issues in 26 different programming languages.

47. What is service health?

Service Health provides a personalized view of the status of your Azure services and regions, as well as information about current incidents, planned maintenance and health advisories.

48. What are pods in kubernetes?

A pod is the smallest execution unit in Kubernetes. A pod encapsulates one or more applications. Pods are ephemeral by nature, if a pod (or the node it executes on) fails, Kubernetes can automatically create a new replica of that pod to continue operations.

49. What is Docker?

Docker is an open source platform that enables developers to build, deploy, run, update and manage containers—standardized, executable components that combine application source code with the operating system (OS) libraries and dependencies required to run that code in any environment.

50. Whare are Containers?

Containers simplify development and delivery of distributed applications. They have become increasingly popular as organizations shift to cloud-native development and hybrid multicloud environments.

51. What is Docker Image?

A Docker image is a file used to execute code in a Docker container. Docker images act as a set of instructions to build a Docker container, like a template. Docker images also act as the starting point when using Docker. An image is comparable to a snapshot in virtual machine (VM) environments.

52. What is container registry?

Azure Container Registry allows you to build, store, and manage container images and artifacts in a private registry for all types of container deployments. Use Azure container registries with your existing container development and deployment pipelines.

53. What is container instance?

Azure Container Instances is a solution for any scenario that can operate in isolated containers, without orchestration. Run event-driven applications, quickly deploy from your container development pipelines, and run data processing and build jobs.

54. What is kubectl used for?

The Kubernetes command-line tool, kubectl, allows you to run commands against Kubernetes clusters. You can use kubectl to deploy applications, inspect and manage cluster resources, and view logs.

55. What is azure cli?

The Azure Command-Line Interface (CLI) is a cross-platform command-line tool to connect to Azure and execute administrative commands on Azure resources. It allows the execution of commands through a terminal using interactive command-line prompts or a script.

56. What is DockerFile?

A Dockerfile is a text document that contains all the commands a user could call on the command line to assemble an image. This page describes the commands you can use in a Dockerfile

57. How do I write a YAML file for Kubernetes?

To create a Kubernetes pod with YAML, you first create an empty file, assign it the necessary access permissions, and then define the necessary key-value pairs. The important ones are the apiVersion, the kind (pod), name, and the containers within the pod.

58. What is service in Kubernetes?

A Kubernetes service is a logical abstraction for a deployed group of pods in a cluster (which all perform the same function). Since pods are ephemeral, a service enables a group of pods, which provide specific functions (web services, image processing, etc.) to be assigned a name and unique IP address (clusterIP).

59. What is Name Server?

A name server refers to the server component of the Domain Name System (DNS), one of the two principal namespaces of the Internet. The most important function of DNS servers is the translation (resolution) of human-memorable domain names (example.com) and hostnames into the corresponding numeric Internet Protocol (IP) addresses (192.0.2.1)

60. What is custom domain in azure app service?

Configuring Custom Domain. Adding a custom domain to Azure App Service requires you to have access to your domain provider service where you will need to update DNS records to confirm that you own the domain. You can choose to use a root domain or a sub domain to redirect to your application based on your requirement.

61. What is bastion azure?

Azure Bastion is a fully managed service that provides more secure and seamless Remote Desktop Protocol (RDP) and Secure Shell Protocol (SSH) access to virtual machines (VMs) without any exposure through public IP addresses.