**Azure fundamental assignment 3**

1. **What is Azure App Service and when to opt for Azure App Service?**

Azure App Service is an HTTP-based service for hosting web applications, REST APIs, and mobile back ends. You can develop in your favorite language, be it .NET, .NET Core, Java, Ruby, Node.js, PHP, or Python. Applications run and scale with ease on both Windows and Linux-based environments.

App Service not only adds the power of Microsoft Azure to your application, such as security, load balancing, autoscaling, and automated management. You can also take advantage of its DevOps capabilities, such as continuous deployment from Azure DevOps, GitHub, Docker Hub, and other sources, package management, staging environments, custom domain, and TLS/SSL certificate

Fully managed service with built-in infrastructure maintenance, security patching and scaling

Built-in continuous integration and continuous delivery (CI/CD) and zero-downtime deployments

Support for virtual networks, and ability to run in an isolated and dedicated App Service Environment

Rigorous security and compliance standards, including SOC and PCI, for seamless deployments in the cloud, in Azure Government, and on premises

1. **Differentiate Azure Container Instances and Azure Kubernetes Service**

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| **Azure Container Instances (ACI)** | **Azure Kubernetes Service (AKS)** |
| Azure Container Instances (ACI) offers an easy way to run containers in the Azure cloud, eliminating the need to manage virtual machines (VMs) or using more complex container orchestration services. | Azure Kubernetes Service (AKS) simplifies the deployment of managed Kubernetes in Azure. |
| ACI is based on a serverless model (like the comparable AWS service, Amazon Fargate). It starts containers in the Azure cloud in seconds. It is ideal for simple container-based workloads like smaller-scale apps, build jobs, and task automation. | AKS handles most of the complexity and operational tasks related to managing Kubernetes—including tasks like health monitoring, upgrades, and networking. AKS manages Kubernetes master nodes, while customers manage and maintain agent nodes. |
| While ACI does not require the use of Kubernetes or other orchestrators, it does support them, and can be used together with plain Kubernetes or Azure Kubernetes Service. | AKS is a free managed service. Customers are only required to pay for agent nodes used by the clusters. There is no need to pay for any of the masters, which are configured and deployed by AKS. |

1. **What is the Azure function? Explain in brief.**

Azure Functions is a serverless solution that allows you to write less code, maintain less infrastructure, and save on costs. Instead of worrying about deploying and maintaining servers, the cloud infrastructure provides all the up-to-date resources needed to keep your applications running.

You focus on the pieces of code that matter most to you, and Azure Functions handles the rest.

1. **What is Azure Virtual Desktop?**

Azure Virtual Desktop is a desktop and app virtualization service that runs on the cloud.

Here's what you can do when you run Azure Virtual Desktop on Azure:

Set up a multi-session Windows 10 deployment that delivers a full Windows 10 with scalability

Virtualize Microsoft 365 Apps for enterprise and optimize it to run in multi-user virtual scenarios

Provide Windows 7 virtual desktops with free Extended Security Updates

Bring your existing Remote Desktop Services (RDS) and Windows Server desktops and apps to any computer

Virtualize both desktops and apps

Manage Windows 10, Windows Server, and Windows 7 desktops and apps with a unified management experience

1. **What is Azure virtual networking? Explain in detail.**

An Azure Virtual Network (VNet) is a representation of your own network in the cloud. It is a logical isolation of the Azure cloud dedicated to your subscription. You can use VNets to provision and manage virtual private networks (VPNs) in Azure and, optionally, link the VNets with other VNets in Azure, or with your on-premises IT infrastructure to create hybrid or cross-premises solutions. Each VNet you create has its own CIDR block and can be linked to other VNets and on-premises networks as long as the CIDR blocks do not overlap. You also have control of DNS server settings for VNets, and segmentation of the VNet into subnets.

Use VNets to:

Create a dedicated private cloud-only VNet. Sometimes you don't require a cross-premises configuration for your solution. When you create a VNet, your services and VMs within your VNet can communicate directly and securely with each other in the cloud. You can still configure endpoint connections for the VMs and services that require Internet communication, as part of your solution.

Securely extend your data center. With VNets, you can build traditional site-to-site (S2S) VPNs to securely scale your datacenter capacity. S2S VPNs use IPSEC to provide a secure connection between your corporate VPN gateway and Azure.

Enable hybrid cloud scenarios. VNets give you the flexibility to support a range of hybrid cloud scenarios. You can securely connect cloud-based applications to any type of on-premises system such as mainframes and Unix systems

1. **Explain Azure VPN gateway.**

A VPN gateway is a specific type of virtual network gateway that is used to send encrypted traffic between an Azure virtual network and an on-premises location over the public Internet. You can also use a VPN gateway to send encrypted traffic between Azure virtual networks over the Microsoft network. Each virtual network can have only one VPN gateway. However, you can create multiple connections to the same VPN gateway. When you create multiple connections to the same VPN gateway, all VPN tunnels share the available gateway bandwidth.

A virtual network gateway is composed of two or more VMs that are automatically configured and deployed to a specific subnet you create called the gateway subnet. The gateway VMs contain routing tables and run specific gateway services. You can't directly configure the VMs that are part of the virtual network gateway, although the settings that you select when configuring your gateway impact the gateway VMs that are created.