

Faculty of Information Technology										
<p>I declare that I am familiar with, and will abide to the Examination rules of CTU</p> <p>D.K.S</p> <p>Signature</p>	<p>SUBJECT NAME: Solutions Development</p> <p>SUBJECT CODE: SLD521</p>									
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Question 1

1.1 What is the difference between scaling vertically (that is, scaling up/down) and scaling horizontally (that is, scaling in/out)?

Scaling up refers to increasing or decreasing the resources available on a single server or computer. B. Increase the amount of RAM, CPU, or storage. This is also called scaling up or scaling down.

Horizontal scaling, on the other hand, refers to adding or removing additional servers or machines from the system. This allows the workload to be distributed across multiple servers, resulting in better performance and higher availability. This is also called scaling in or scaling out. So scaling up involves increasing the capacity of a single machine, and scaling out involves adding more machines to the system to increase the overall capacity. Both approaches have their advantages and disadvantages, and the choice depends on the specific needs and constraints of the scaled system.

1.2 What is the resource provider for virtual machines?

The virtual machine (VM) resource provider depends on the virtualization technology used. Generally, VMs run on physical servers that are responsible for providing the underlying hardware resources needed to run the VM. Physical servers are often referred to as host computers or host servers.

A host server typically runs a hypervisor that is responsible for creating, managing, and running VMs. A hypervisor abstracts the underlying hardware resources such as CPU, memory, storage, etc. and presents them to the VM as virtualized resources. This allows multiple VMs to share the physical resources of the host server while providing each VM with a separate and isolated virtual environment. VMware vSphere, Microsoft Hyper-V, and KVM (Kernel-based Virtual Machine) are examples of hypervisors commonly used in the industry. Cloud providers such as Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure also offer their own virtualization technologies to offer VMs as a service to their customers.

1.3 With SaaS, you, as the consumer, manage data, access, and the operating system running the software. True or false? Explain your choice.

False.

In Software as a Service (SaaS), software applications are hosted and managed by a third party and the consumer accesses the software over the Internet (usually through her web browser). The provider is responsible for managing data, access and the operating system on which the software runs.

In other words, the consumer does not manage the underlying infrastructure, such as the servers and operating systems that run the software. Instead, the provider manages the infrastructure and the consumer simply uses the software as a service, typically paying a subscription fee for access. Providers are responsible for ensuring that their software is available, secure, and up-to-date, and for managing backups, disaster recovery, and other aspects of their service. This allows consumers to focus on using the software rather than managing the underlying infrastructure.

1.4 Azure virtual machines are an example of which cloud service model?

Azure virtual machines are an example of the Infrastructure as a Service (IaaS) cloud service model.

In the IaaS model, cloud providers offer virtualized computing resources over the Internet. B. Virtual Machines, Storage, and Networking. Consumers can provision and manage virtual machines in the cloud, including operating systems, applications, and middleware. This gives consumers more flexibility and control over their infrastructure compared to other cloud service models such as Platform as a Service (PaaS) and Software as a Service (SaaS).

Azure Virtual Machines gives consumers the ability to create and manage virtual machines in the Azure cloud. It allows consumers to run different workloads, including Windows and Linux-based applications, on virtual machines in the cloud with different configuration options for CPU, memory, storage, and network settings. Consumers are responsible for managing operating systems, applications, and middleware on virtual machines, while Azure is responsible for managing the underlying physical infrastructure such as servers, storage, and networking.

1.5 What is the maximum number of resource groups an Azure resource can be a member of?

In Azure, resources can be members of one or more resource groups, but each resource can belong to only one resource group at a time.

This is because resource groups are used to logically organize resources and manage their access control, policies, and billing, so a resource cannot belong to more than one resource group at the same time.

However, you might want to move resources from one resource group to another, or to another subscription, as your needs and organizational structure change.

Question 2

2.1 Describe the step-by-step process for creating an Azure Web Service Application, including the necessary configurations and options that need to be selected. Additionally, explain the benefits of using Azure App Service Web Apps and how they can be leveraged to develop and deploy web applications in the cloud.

1. Sign in to the Azure portal and click on the "Create a resource" button.
2. In the search bar, type "Web App" and select the "Web App" option from the dropdown list.
3. Click on the "Create" button to start the Web App creation process.
4. In the "Basics" tab, choose your subscription and resource group, and then provide a unique name for your Web App.
5. Choose your preferred runtime stack, such as .NET, Node.js, or Python.
6. Select the operating system and region where you want to host your Web App.
7. In the "App Service plan" section, choose an existing plan or create a new one. An App Service plan specifies the size, capacity, and features of the virtual machines that will host your Web App.
8. Click on the "Review + create" button to review your Web App settings and create your Web App.

After creating the Web App, you can configure it further by setting up custom domains, SSL certificates, scaling options, deployment slots, and more. You can also deploy your web application code directly to the Web App using deployment tools such as Git, Azure DevOps, or Visual Studio.

One of the main benefits of using Azure App Service Web Apps is that they provide a fully managed platform for hosting and scaling web applications without requiring you to manage the underlying infrastructure. This can help you reduce operational costs, increase development agility, and improve the availability and performance of your web applications.

Azure App Service Web Apps also offer several other features and benefits, including:

- Automatic scaling based on demand and resource utilization
- Integration with Azure Active Directory for authentication and authorization
- Built-in support for popular development frameworks, such as ASP.NET, Node.js, and PHP
- Continuous deployment and integration capabilities
- Monitoring and diagnostics tools for troubleshooting and performance optimization.

By leveraging these features, developers and IT teams can build, deploy, and scale web applications in the cloud more efficiently and effectively.

Completed Declaration of **Authenticity**

I ____Dillan Kyle Singh____ hereby declare that the contents of this assignment is entirely my own work except for the following documents: (List the documents and page numbers of work in this portfolio that were generated in a group)

Activi ty	Date
JD521	16 March 2023

Signature: D.K.S

Date: 16 March 2023