**BAIT3273 Tutorial 6**

**Core Cloud Services - Introduction to Azure compute**

• Azure Compute

• Virtual machines, Containers, Azure App Service, Serverless computing

• Scaling VMs in Azure

**Instructions**

• Please use this document to answer all the questions in this tutorial.

• Rename the file with your student code and tutorial group number. For example, 1909846-BAIT3273-S1-2020-Tut1-RDSG01 with RDSG01 as your respective programme and group number. Besides, replace *XXXXXXXX* at the header with your student code.

• Every student must submit this doc individually at the end of the tutorial to google classroom.

**Task 1: Azure Compute**

Azure compute is an on-demand computing service for running cloud-based applications. It provides computing resources like multi-core processors and supercomputers via virtual machines and containers. It also provides serverless computing to run apps without requiring infrastructure setup or configuration. The resources are available on-demand and can typically be created in minutes or even seconds. You pay only for the resources you use and only for as long as you're using them.

There are four common techniques for performing compute in Azure:

**Virtual machines**

**Containers**

**Azure App Service**

**Serverless computing**

1.a

• What are Virtual Machines?

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| Answer:  Virtual machines or VMs are software emulations of physical computers. They include a virtual processor, memory, storage, and networking resources. They host an operating system (OS), and you’re able to install and run software just like a physical computer. And by using a remote desktop client, you can use and control the virtual machine as if you were sitting in front of it. |

• What are containers?

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| Answer:  Containers are a visualization environment for running applications. Just like virtual machines, containers are run on top of a host operating system. But unlike VMs, containers don’t include an operating system for the apps running inside the container. Instead, containers bundle the libraries and components needed to run the application and use the existing host Operating System running the container. |

• What is Azure App Service?

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| Answer:  Azure App Service is a platform-as-a-service(Paas) offering in Azure that is designed to host enterprise-grade web-oriented applications. You can meet rigorous performance, scalability, security and compliance requirements while using a fully managed platform to perform infrastructure maintenance. |

• What is Serverless Computing?

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| Answer:  Severless computing is a cloud-hosted execution environment that runs your code but completely abstracts the underlying hosting environment. You create an instance of the services and you add your code; no infrastructure configuration or maintenance is required, or even allowed. |

**Task 2: Scaling VMs in Azure**

2.

You can run single VMs for testing, development, or minor tasks; or you can group VMs together to provide high availability, scalability, and redundancy. Azure has several features such that, no matter what your uptime requirements are, Azure can meet them.

These features include:

**Availability sets**

**Virtual Machine Scale Sets**

**Azure Batch**

• What are availability sets?

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| Answer:  An availability set is a logical grouping of two or more VMs that help keep your application available during planned or unplanned maintenance.  With an availability set, you get:  Up to three fault domains that each have a server rack with dedicated power and network resources.  Five logical update domains which then can be increased to a maximum of 20.  Your VMs are then sequentially placed across the fault and update domains. The following diagram shows an example where you have six VMs in an availability ser distributed across the two fault domains and five update domains. |

• What are virtual machine scale sets?

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| Answer:  Azure Virtual Machine Scale Sets let you create and manage a group of identical, load-balanced VMs.  Imagine you’re running a website that enables scientists to upload astronomy images that need to be processed.  If you duplicated the VMs, you’d normally need to configure an additional service to route requests between multiple instances of the website.  Virtual Machine Scale Sets could do that work for you. |

• What is Azure Batch?

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| Answer:  Azure Batch enables large-scale job scheduling and computes management with the ability to scale to tens, hundreds, or thousands of VMs.  There may be situations in which you need raw computing power or supercomputer level compute power. Azure provides these capabilities. |