**BAIT3273 Tutorial 1**

**Cloud Concepts**

• Cloud Computing and Benefits

• Economies of scale

**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: Cloud Computing and Benefits**

Cloud computing is renting resources, like storage space or CPU cycles, on another company's computers. You only pay for what you use. The company providing these services is referred to as a cloud provider. Some example providers are Microsoft, Amazon, and Google.

The cloud provider is responsible for the physical hardware required to execute your work, and for keeping it up-to-date. The computing services offered tend to vary by cloud provider. However, typically they include:

**Compute power**

**Storage**

**Networking**

**Analytics**

1.a

• Give examples for above computing services.

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| Answer: |

• The goal of cloud computing.

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| Answer:  the goal of cloud computing is to provide easy, scalable access to computing resources and IT services. |

• What is a **Virtual Machine** (VM)?

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| Answer:  A virtual machine (VM) is a virtual environment that functions as a virtual computer system with its own CPU, memory, network interface, and storage, created on a physical hardware system (located off- or on-premises). Software called a hypervisor separates the machine’s resources from the hardware and provisions them appropriately so they can be used by the VM. |

•What are **containers**?

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| Answer:  Containers are a form of operating system virtualization. A single container might be used to run anything from a small microservice or software process to a larger application. Inside a container are all the necessary executables, binary code, libraries, and configuration files. |

• What is a **Serverless Computing**? Give an example.

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| Answer:  Serverless computing is a method of providing backend services on an as-used basis. A serverless provider allows users to write and deploy code without the hassle of worrying about the underlying infrastructure. A company that gets backend services from a serverless vendor is charged based on their computation and do not have to reserve and pay for a fixed amount of bandwidth or number of servers, as the service is auto-scaling. Note that despite the name serverless, physical servers are still used but developers do not need to be aware of them.  AWS Lambda, Microsoft Azure Functions, Google Cloud Functions and IBM OpenWhisk are all well-known examples of serverless services offered by the cloud providers. |

1.b

• Give examples of devices and applications read and/or write data.

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| Answer: |

1.c

Cloud computing isn't an all-or-nothing service approach. Companies can choose to use the cloud to store their data and execute logic as much, or as little, as necessary to fulfill their business requirements. Existing businesses might choose a gradual movement to save money on infrastructure and administration costs (referred to as "lift and shift"), while a new company might start in the cloud.

• Can you identify the benefits of cloud computing?

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| Answer: |

**Task 2: Economies of scale**

2.

Economies of scale is the ability to do things more efficiently or at a lower-cost per unit when operating at a larger scale. This cost advantage is an important benefit in cloud computing.

• How the cloud computing can benefit from economies of scale?

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| Answer: |