**CST8912 – Cloud Solution Architecture**

**Graded Lab Activity #1**

1. **Compose the appropriate networking, compute, storage, and database services to meet the operational requirements of various application scenarios.**

* Design cloud architecture layers and their function to maximize reliability and resiliency of application services
* Outline core architectural components to meet the operational requirements of various application scenarios
* Describe cloud service models (IaaS, PaaS, SaaS) and implement highly available and elastically scalable solutions
* Identify the core features of cloud computing and their interactions with each service layer

**Introduction**

A virtual machine (VM) is a digital version of a physical computer. Virtual machine software can run programs and operating systems, store data, connect to networks, and do other computing functions, and requires maintenance such as updates and system monitoring.

Compute Engine lets you create virtual machines that run different operating systems, including multiple flavors of Linux (Debian, Ubuntu, Suse, Red Hat, CoreOS) and Windows Server, on cloud infrastructure. You can run thousands of virtual CPUs on a system that is designed to be fast and to offer strong consistency of performance.

**Purpose of this hands-on Lab that can be simulated on any Cloud Service Provider**

In this lab, you'll learn how to configure and start your first compute service with Azure (Virtual Machine (VM)) on **Linux** for **Canada central region**.

**Create a resource group CST8912 for all the resources that will be created under this resource group as part of your future labs**

**Lab Instructions: Provisioning and Managing an Azure Virtual Machine**

**Task 1: Create a Virtual Machine**

1. **Sign in to the Azure Portal**
2. **In the search bar, type Virtual Machines and select Virtual Machines from the results.**
3. **Click + Create → Azure Virtual Machine.**
4. **Under Basics:**

**Subscription: Select your subscription.**

**Resource Group: Create a new resource group or use an existing one.**

**Virtual Machine Name: Enter a unique VM name.**

**Region: Select Canada Central.**

**Image: From the Marketplace, choose Ubuntu Server 18.04 LTS.**

**Size: Select Standard\_B1s (1 vCPU, 1 GiB memory).**

**Authentication type: Choose SSH public key and provide your key.**

**Task 2: Configure Disks**

**In the Disks tab, select Premium SSD as the OS disk type.**

**Task 3: Configure Networking**

**In the Networking tab, create a new Virtual Network (leave default settings).**

**Keep default subnet, public IP, and NIC settings.**

**Task 4: Review Additional Settings**

**Leave default options for Management, Advanced, and Tags tabs.**

**Click Review + Create and then Create to deploy the VM.**

**Task 5: Perform Basic VM Operations**

**Once the VM is deployed, go to Virtual Machines in the portal.**

**Select your VM and perform the following actions:**

**Start**

**Stop**

**Restart**

**Delete (optional, end of lab)**

**Task 6: Create a Log Analytics Workspace**

**In the Azure portal, search for Log Analytics Workspaces.**

**Click + Create.**

**Under Basics:**

**Resource Group: Use the same one as your VM.**

**Region: Select Canada Central (must match VM region).**

**Enter a workspace name.**

**Click Review + Create, then Create.**

**Task 7: Connect VM to Log Analytics**

**Navigate to your Virtual Machine in the Azure portal.**

**In the left-hand menu, under Monitoring, select Insights or Logs.**

**Choose Enable monitoring and, click on new and select the Log Analytics workspace you just created.**

**Wait for the monitoring solution to be provisioned.**

**Task 8 SSH into the VM**

* Add a task where users must connect to the VM using SSH:
  + Verify the VM is reachable.
  + Run basic commands (uname -a, top, df -h) to check system health.
* create a new file or folder as a test.

**Task 9. Delete all the resources – clean and delete resources**

**Reference to create Linux VMs on Azure**:   
<https://www.youtube.com/watch?v=EhdbgDFFWLU>

**Reference to create Linux VMs on AWS**:

<https://www.youtube.com/watch?v=PrkEulPOV4s>

**Reference to create Linux VMs on GCP**:

<https://www.youtube.com/watch?v=2d5LzJNj46w>

**Grading criteria for this lab**

For grading prepare a lab report with your findings and analysis and share all screenshots in the lab report and upload the lab report in Assignments tab in Brightspace.