Swinburne University of Technology

*COS20019 Cloud Computing Architecture*

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ACA Module 9 Challenge Lab - Creating a Scalable and Highly Available Environment for the Cafe

*Sunday 12th October, 2023*

**Task 1: Inspecting your environment**

**Question 1, 2, 3:**

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**Question 4, 5, 6:**

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### Task 2: Creating a NAT gateway for the second Availability Zone

Create a NAT gateway in the Public Subnet in the second Availability Zone

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In Private Route Table 2, choose Edit routes

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Add new routes with the following configuration:

* Destination: 0.0.0.0/0
* Target: Choose earlier created NAT gateway

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### Task 3: Creating a bastion host instance in a public subnet

From the **Amazon EC2 console**, create an EC2 instance in one of the public subnets of the *Lab VPC*. It must meet the following criteria:

* Name**: Bastion Host**
* **Amazon Machine Image (AMI)**: *Amazon Linux 2023 AMI*

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* **Instance type**: *t2.micro*
* Uses the **vockey** key pair

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* **Auto-assign Public IP**: This setting should be enabled

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* Only allows the following traffic:
  + **Type**: *SSH*
  + **Port**: 22
  + **Source**: Your IP address

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### Task 4: Creating a launch template

Create a launch template by using the AMI that was created during lab setup. It must meet the following criteria.

* **AMI**: Cafe WebServer Image

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* **Instance type**: *t2.micro*
* **Key pair (login)**: Uses a *new key pair*

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* **Security groups**: CafeSG

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* **Resource tags**:
  + **Key**: Name
  + **Value**: webserver
  + **Resource types**: *Instances*

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* **IAM Instance Profile**: CafeRole

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### Task 5: Creating an Auto Scaling group

Create a new Auto Scaling Group that meets the following criteria:

* **Launch template**: Uses the launch template that you created in the previous task

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* **VPC**: Uses the VPC that was configured for this lab
* **Subnets**: Uses Private Subnet 1 and Private Subnet 2

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* Skips *all* the advanced options
* Has a **Group size** configured as:
* **Desired capacity**: 2
* **Minimum capacity**: 2
* **Maximum capacity**: 6

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* Enables the **Target tracking scaling policy** configured as:
  + **Metric type**: *Average CPU utilization*
  + **Target Value**: 25
  + **Instances need**: 60

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Two new instances created

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### Task 6: Creating a load balancer

Create an HTTP Application Load Balancer that meets the following criteria:

* + **VPC**: Uses the VPC configured for this lab
  + **Subnets**: Uses the two *public subnets*

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* + Skips the HTTPS security configuration settings
  + **Security group**: Creates a *new security group* that allows HTTP traffic from anywhere

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* + **Target group**: Creates a *new target group*
  + Skips registering targets

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Health check target group

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### Task 7: Testing the web application

To test the café web application, visit the Domain Name System (DNS) name of your load balancer and append /cafe to the URL.

The café application should load.

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### Task 8: Testing automatic scaling under load

Stress testing target tracking policy group

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Submitting Work!

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ENDLAB.