

TARC

TUNKU ABDUL RAHMAN
UNIVERSITY COLLEGE

BEYOND EDUCATION

FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY

AACS3253 CLOUD COMPUTING FOR BUSINESS

Assignment Submission Form

Programme	Diploma in Information Technology
Tutorial Group	Group 5
Lecturer / Tutor	Miss Wahidah
Submission Date	4 / 4 / 2022

Plagiarism Statement:

We confirm that the submitted works are all our own work and are in our own words. The work is original.

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Assessment Rubrics

Task 1 - 20m

Criteria/Marks Allocation	Excellent (17-20)	Good (12-16)	Average (7-11)	Poor (1-6)	Comments by Lecturer (If any)	Score
1. Cloud Services in Detail 1) Research Amazon Web Services, Google Cloud Platform, Microsoft Azure, and Huawei Cloud. Write a detailed comparison. Example of comparative point: <ul style="list-style-type: none"><input type="checkbox"/> Business model, pricing<input type="checkbox"/> Security, networking<input type="checkbox"/> Compute, storage, database<input type="checkbox"/> Automatic Scaling, Monitoring<input type="checkbox"/> Reliability, fault tolerance<input type="checkbox"/> etc.						

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Task 2 – 20m

Criteria/Marks Allocation	Excellent (17-20)	Good (12-16)	Average (7-11)	Poor (1-6)	Comments by Lecturer (If any)	Score
2a.	Organization 2) Choose a Malaysia company, study and discuss <ul style="list-style-type: none"><input type="checkbox"/> The company organization, operations, products, services, challenges, etc.<input type="checkbox"/> Discuss the suitable cloud architecture and services for the company.<input type="checkbox"/> Benefits by adopting proposed cloud architecture and services by the company.					

Task 2 – 10m

Criteria/Marks Allocation	Excellent (9-10)	Good (6-8)	Average (4-5)	Poor (1-3)	Comments by Lecturer (If any)	Score
2b.	<input type="checkbox"/> Draw the cloud architecture, you may use any drawing tools or hand drawing, if you are not sure how to draw architecture diagram, can refer this article https://www.conceptdraw.com/examples/3-tier					

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Task 3 – 50m

Criteria/Marks Allocation	Excellent (9-10)	Good (6-8)	Average (4-5)	Poor (1-3)	Comments by Lecturer (if necessary)	Score
3.	Build a Simple Cloud Computing Application 3) Choose an application from the cloud services discussed in task 2, build a simple online business application in cloud computing. <ul style="list-style-type: none"><input type="checkbox"/> A company operation application such as logistic and delivery application, supply chain management application, etc.<input type="checkbox"/> Or product and services provided by the company such as an e-commerce portal, a booking application, etc.<input type="checkbox"/> You may choose any cloud service provider, and include resources such as networking VPC, compute EC2/virtual machine, databases, storage, auto scaling, monitoring, etc.<input type="checkbox"/> Screenshot of resources deployed, snippet of web page(s) with URL and database table, field, records, etc.					
1.	Networking –deploy resources including servers/databases in the VPC networking with security features					
2.	Compute – EC2/virtual machine					
3.	Database – RDS with database tables					
4	Simple web application with database features and connection					
5.	Scale & Load balance					

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Faculty of Computing and Information Technology

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Programme and Tutorial Group : Diploma In Information Technology Group 5

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AACS3253 Cloud Computing For Business

Task 1: Cloud Services in Detail	6
Cloud	6
Pricing	6
Security	7
Networking	7
Compute	8
Storage	8
Database	9
Monitoring	9
Reliability	10
Fault tolerance	11
Task 2: Organization	12
The company	12
Purpose and design a cloud architecture	13
Benefit of adopting the proposed architecture	14
Cloud architecture	15
Task 3: Setting Up a Simple Cloud Computing Application	16
Reference	26

Task 1: Cloud Services in Detail

Comparative Points	Amazon Web Services (AWS)	Microsoft Azure
Cloud	<p>AWS has a Virtual Private Cloud (VPC) but it does not provide the best hybrid cloud support as it is less hybrid-cloud-friendly and less open private cloud.</p> <p>So, AWS is not recommended for industries that contain sensitive data like banking.</p>	<p>Azure has a virtual network cloud and has an excellent hybrid cloud market which supports hybrid cloud better than AWS.</p> <p>Organizations are able to integrate the onsite server with Cloud instance by using Azure's hybrid cloud service.</p>
Pricing	<p>In overall services pricing, AWS has a higher per-hour price across the board.</p> <p>However for 1-year and 3-years reserved instances, AWS provides a higher discount of ~42% and ~62% respectively.</p> <p>AWS also provides more flexible payment options, allowing the user</p>	<p>In overall services pricing, Azure has a lower per-hour price across the board.</p> <p>However for 1-year and 3-years reserved instances, Azure provides a lower discount of ~32% and ~57% respectively.</p> <p>However, Azure only provides a “pay as you go” payment option together with the 1-year and 3-years reserved.</p>

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	<p>to change the instance types midway, a convertible tier, monthly payment, decreased discounts for partially upfront payment, 1-years and 3-years reserved.</p>	
Security	<p>AWS security is provided by using specific roles with permission control capabilities.</p> <p>Users with special privileges control provides security. AWS's security groups are also superb because it provides an implementation of granular identity access management (IAM).</p> <p>AWS does not offer any built-in-features to address Privileged Access Management (PAM).</p>	<p>Azure security is delivered by granting rights to the entire account.</p> <p>Unlike AWS, users, federation, and access must be configured individually for each account.</p> <p>Azure has a built-in-feature called Privileged Identity Management (PIM), which includes just-in-time privilege access to AzureActive Directory (AD) and Azure Resources.</p> <p>*Azure Active Directory is a single source for rights management and authorization.</p>
Networking	<p>In AWS, VPC is used for networking and APIs for cross-premises connectivity.</p>	<p>Azure uses a virtual network for networking or content delivering as well as cross-premises connectivity.</p>

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	<p>Electronic Load Balancer (ELB) is used for load balance during networking.</p>	<p>Load Balancer is used for load balancing during content delivery.</p>
Compute	<p>AWS uses Elastic Compute Cloud (EC2) to scale its computing and manage the software container. Computers are there to do calculations, processings and computing large amounts of data. And the processing can be scaled by cloud service providers according to the user's requirements.</p> <p>For instance, AWS uses EC2, Lambda, Elastic Beanstalk and AWS auto scaling.</p>	<p>Azure uses virtual machines to compute and a larger scale would use scale sets of virtual machines. It uses Container Service to manage software and uses Docker Container and Container Registry for Docker container registry.</p> <p>For instance, Azure uses Virtual Machine, various functions, app service and Virtual Machine Scale Sets.</p>
Storage	<p>AWS uses S3 as a Simple Storage Service which provides a variety of articles and tutorials.</p> <p>It also includes Glacier as the Archive storage, a data archive, and S3 occasional access.</p>	<p>Azure employs Storage block blob for storage, which comprises blocks and effectively uploads large blobs.</p> <p>It makes use of storage cool and storage archive for data archive purposes.</p> <p>In terms of storage, Azure offers a more</p>

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	<p>In terms of storage, AWS offers a free tier 30GB SSD storage space for user who wish to do a few testing on AWS</p>	<p>flexible and cheaper option than AWS and its data in the virtual storage is easily backed up as well.</p>
Database	<p>With the support of Amazon Relational Database Service (RDS), AWS is able to provide a relational database as a service.</p> <p>For DynamoDB, it employs NoSQL, while Elasticache is used for caching.</p> <p>While for data migration, AWS uses Database Migration Service to migrate the data from a server to another server.</p>	<p>Azure uses SQL database, MySQL, and PostgreSQL for relational databases.</p> <p>Cosmos DB is used for NoSQL solutions, and Redis Cache is used for caching.</p> <p>While on the Azure side, it uses SQL Database Migration Wizard to migrate data from a server to another.</p>
Monitoring	<p>Amazon CloudWatch is a monitoring service that is designed for DevOps engineers, developers, site reliability engineers (SREs), IT managers, and product owners.</p> <p>The monitoring and operational data are collected by CloudWatch in the form of logs, metrics and events.</p>	<p>Azure Monitor is one of the monitoring tools for Azure.</p> <p>Monitoring telemetry is collected by Azure Monitor from various on-premises and Azure sources.</p> <p>Log data is also sent to Azure Monitor by management tools like Azure Security Center and Azure Automation.</p>

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	<p>The data that is collected will be visualized in an automated dashboard in order to give the view of your AWS resources, applications, and services running on AWS and on-premises.</p> <p>The end-user is able to have a better understanding of the health and performance of the resources by associating metrics with logs.</p> <p>CloudWatch is able to specify the metric thresholds to create the alarm or use an ML algorithm to observe the alarm of the abnormal metric behavior.</p> <p>It is able to know and track the application performance by doing analysis on metrics and logs.</p>	<p>The service collects and saves this telemetry in a log data store which is optimized for cost and performance.</p> <p>Azure Monitor is able to do the analysis on the data, configure the alerts, gain the end-to-end views of applications, diagnose the issue and solve it with machine learning-driven insights.</p>
Reliability	<p>In terms of storage services, AWS is more reliable as it supports longest running.</p> <p>In terms of big data, AWS is more reliable because it is ideal for processing big amounts of data.</p>	<p>In terms of storage capabilities, Azure is more reliable.</p> <p>In terms of computing platform, Azure is more reliable because it offers access through multiple languages, frameworks and tools.</p>

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	<p>In terms of data transmission, AWS is more reliable as it has high transfer stability.</p> <p>In terms of flexibility, AWS is better reliable because it allows customers to modify storage according to their needs.</p>	<p>In terms of availability zones, Azure is more reliable than AWS as it has 140 available zones which is a double of AWS.</p>
Fault tolerance	<p>AWS high availability of zones throughout the world contributes to the excellence that the fault tolerance AWS is able to build. AWS is able to have fault tolerance by having multiple redundant EC2 on standby which the process will migrate into if the main EC2 were to fail.</p>	<p>Azure handles fault tolerance differently depending on the scale of the error. If the error were to be at a small scale, Azure would change the unhealthy VM to a new healthy VM. However, if the scale is at a much larger scale, like a natural disaster, it would mean valuable data would be lost.</p>

Task 2: Organization

The company

Japanese Association is a small company that mainly organizes many Japanese-related festivals, ceremonies and events for people who are interested in Japanese culture. The association would sometimes organize an event that contains a lot of Japanese culture for the participants to experience or learn from. The association first started its operations in social media promoting their events and selling tickets through messaging in social media such as Instagram, Facebook and Twitter.

People who are interested in the events the association organizes, they will need to message them through the default messaging app built in the social media like direct message in Instagram. They would also need to wait until the operator or the handler for that moment to come online and interact with them to complete the payment process or answering questions. If the potential customer were to ask a question they would message the page and wait for a response as normal however, if the potential customer were to wish to buy a ticket for the event, since the association does not have its own website for its purchase process, the customer would need to manually register themselves with the operator through message and pay through bank payments.

Now that the association has grown significantly in size, the events the association has to organize has grown larger in size and the amount of people who are interested in such events has grown as well due to the popularity of anime shows. The operators or handlers are overwhelmed with customer requests and ticket bookings that slow down the whole payment process and customer service. It caused some people to lose interest in such events anymore due to the long response time. Such things would hurt the company image and its potential customers and even customer retention as the service would take a long time to complete.

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Purpose and design a cloud architecture

Our plan is to launch a simple cloud computing application over a virtual computer. So we will have a virtual private computer running the database and the website instance in it and users around the country are able to access the website as long as the virtual computer is running. So an instance should be made where the AMI should be based on Window Server, preferably taking the latest version of the Window Server so that we will not run into compatibility issues when running the application through the virtual computer.

We will then create an RDS for the database to store all of the data whether its user related or website related. The language used for the RDS is preferably MYSQL as it is the easiest and widely used database language in the world. So maintaining it and making changes to the database will not be as difficult and dreadful to work with. Now since we are planning to use MYSQL as the database language, we are able to use MYSQL workbench (version 8.0) to connect to the RDS database remotely with ease. From the workbench we are able to see all the data stored, edit or delete any specific where we see fit.

What we purpose for the whole architecture is to have only two availability zones which are respectively named as availability zone A and availability zone B. We plan to have our first public and private subnet which is named public subnet-1 and private subnet-1 in availability zone A. We also plan to have our second public and private subnet which is named public subnet-2 and private subnet-2 in availability zone B. The reason why we would need public and private subnets is to send outbound traffic to the internet. Basically it is what enables us to utilize the internet to host our website and so on.

So the idea is to have public subnet-1 as our NAT gateway. The NAT gateway purpose is to allow users to access the website. NAT gateway provides the resources without needing an IP address to access the internet without exposing such resources to the incoming internet connections, so users across the internet would not be able to access the resources.

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Benefit of adopting the proposed architecture

If the association company were to adopt the proposed architecture, they would reap tons of benefits as it can smoothen the whole customer experience for its regular and potential customers. The association would be able to reduce some of its employees on the customer and be able to have bigger investment capital to organize a bigger scale and better events for customers.

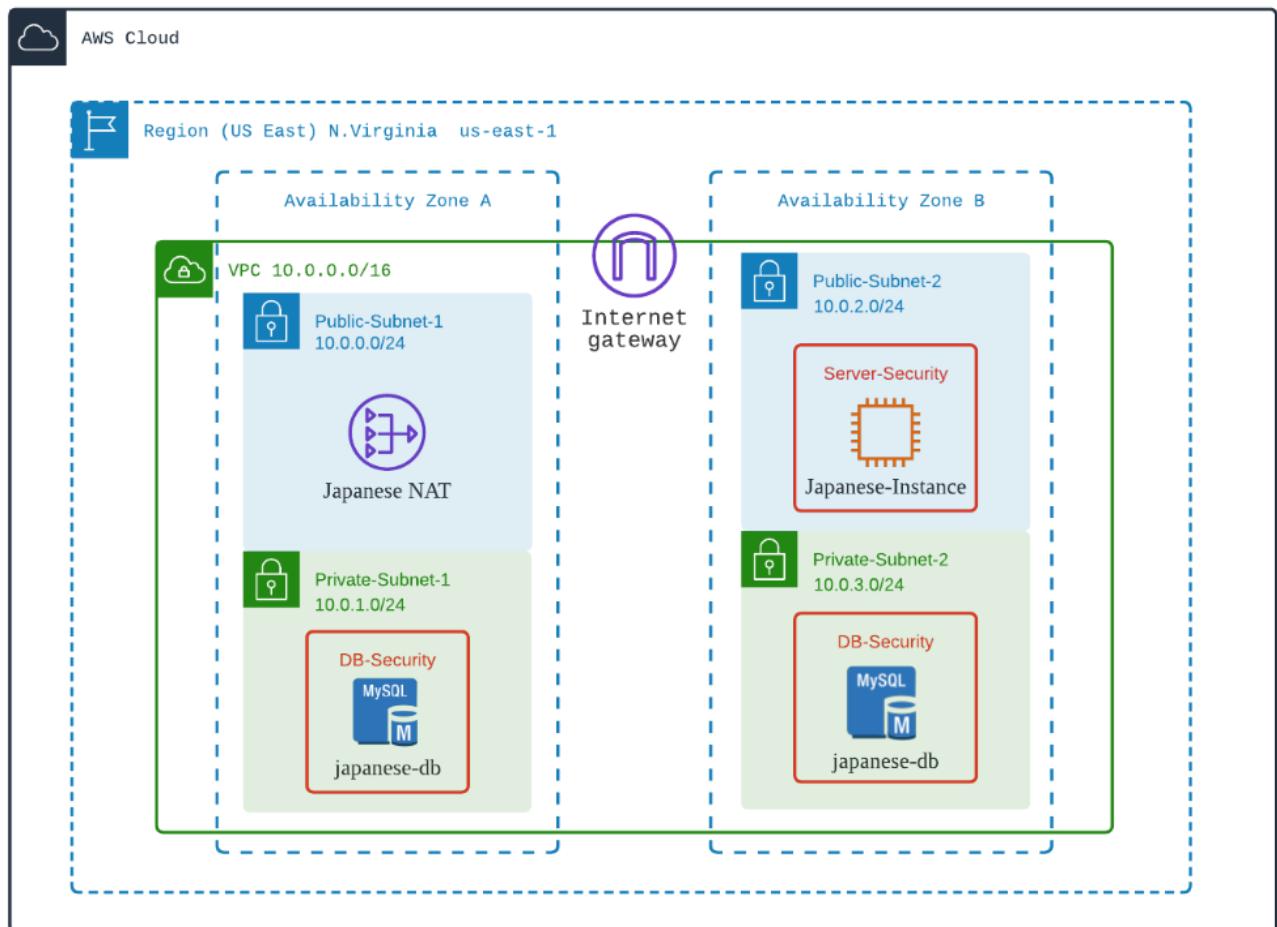
The association will not be needing operators or handlers to handle the whole purchasing process as the website will have the entire ticket booking and purchase system automated. The whole payment process and method will also be smooth and fast as the website handles that too. This would benefit the association in both tangible and intangible as the experience of fast customer response and payment process is able to increase its customer retention and attract more potential customers as the whole is simply pleasant and fast.

If there were to come a situation where the virtual computer is unable to handle the large number of visitors on the website, the association is able to upgrade its specifications of the virtual computer. The association is also able to increase the storage capacity of its database if there comes a day where the database is almost full. The proposed architecture is extremely flexible in its power and storage capacity. So the association is able to adjust the power and storage capacity to their liking.

If there is another situation where the database server is down or suddenly full, there is still a backup database for the association to use while they can handle the technical difficulty of the main database. So this would mean that the website and all of its functionalities would still be running temporarily while the main database is being fixed.

The association will not need to manually list down every purchase of tickets every time a purchase is made as the website automatically enters the new bookings into the database where the association is able to view it through the MYSQL workbench. This would reduce the amount of work needed and would reduce the amount of human error while manually entering the data.

Cloud architecture



Task 3: Setting Up a Simple Cloud Computing Application

1. Create a new elastic IP address

The screenshot shows the AWS VPC Dashboard with the 'Elastic IPs' section selected. A success message at the top states 'Elastic IP address allocated successfully. Elastic IP address 3.209.241.115'. Below this, a table lists the allocated IP address. The table has columns for Name, Allocated IPv4 address, Type, Allocation ID, and Reverse DNS record. One row is shown with the values: Name is blank, Allocated IPv4 address is 3.209.241.115, Type is Public IP, Allocation ID is eipalloc-0e3ee3487cd5f612a, and Reverse DNS record is blank. At the bottom of the page, there is a summary section for the IP address.

2. Create a new VPC

The screenshot shows the 'Step 2: VPC with Public and Private Subnets' page. It includes fields for:

- IPv4 CIDR block: 10.0.0.0/16 (65536 IP addresses available)
- IPv6 CIDR block: Radio button selected for 'No IPv6 CIDR Block'
- VPC name: Japanese VPC
- Public subnet's IPv4 CIDR: 10.0.0.0/24 (256 IP addresses available)
- Availability Zone: us-east-1a
- Public subnet name: Public-Subnet-1
- Private subnet's IPv4 CIDR: 10.0.1.0/24 (256 IP addresses available)
- Availability Zone: us-east-1a
- Private subnet name: Private-Subnet-1

Below these fields, a note says: 'You can add more subnets after Amazon Web Services creates the VPC.'

Under 'Specify the details of your NAT gateway (NAT gateway rates apply.)', there is a field for 'Elastic IP Allocation ID': eipalloc-0e3ee3487cd5f612a.

At the bottom, there are sections for 'Service endpoints' (with an 'Add Endpoint' button) and configuration options: 'Enable DNS hostnames' (Yes or No), 'Hardware tenancy' (Default), and buttons for 'Cancel and Exit', 'Back', and 'Create VPC'.

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3. VPC details after created

The screenshot shows the AWS VPC Details page for the 'Japanese VPC'. The page includes a navigation sidebar with links like 'New VPC Experience', 'VPC Dashboard', 'EC2 Global View', 'Filter by VPC', 'Select a VPC', 'Subnets', 'Route Tables', 'Internet Gateways', 'Egress Only Internet Gateways', 'Carrier Gateways', 'DHCP Options Sets', 'Elastic IPs', 'Managed Prefix Lists', 'Endpoints', 'Endpoint Services', 'NAT Gateways', 'Peering Connections', 'SECURITY', 'NETWORK ANALYSIS', and 'Feedback'. The main content area displays the 'Your VPCs (1/2)' section with a table showing two VPCs: 'Japanese VPC' (selected) and another unnamed VPC. The 'Details' section provides a breakdown of the VPC's configuration, including its VPC ID, State, DHCP options set, IPv4 CIDR, and other network parameters.

4. Create 2 more subnets which are public and private subnet

The screenshot shows the AWS Subnets page with a success message: 'You have successfully created 1 subnet: subnet-0bf6728f8eccbc87'. The main content area displays the 'Subnets (4/10)' section with a table listing eight subnets. The subnets are categorized as follows: PS1 (Public), PRS2 (Public), Private-Subnet-2 (Private), PS2 (Public), Public-Subnet-2 (Public), Public-Subnet-1 (Public), PR51 (Public), and Private-Subnet-1 (Private). The table includes columns for Name, Subnet ID, State, VPC, IPv4 CIDR, and IPv6 CIDR.

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5. Create 2 route tables for public and private subnets

Create route table Info

A route table specifies how packets are forwarded between the subnets within your VPC, the internet, and your VPN connection.

Route table settings

Name - optional
Create a tag with a key of 'Name' and a value that you specify.

VPC
The VPC to use for this route table.

Tags
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key Value - optional
You can add 49 more tags.

6. Add specific subnets into its route table

VPC > Route tables > rtb-08237dad45babcb6be > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/4)

<input type="checkbox"/>	Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
<input type="checkbox"/>	Private-Subnet-2	subnet-0bf6728f8eccbc87	10.0.3.0/24	-	Main (rtb-00ab819f365999d5c)
<input checked="" type="checkbox"/>	Public-Subnet-2	subnet-0b8c843f168338440	10.0.2.0/24	-	Main (rtb-00ab819f365999d5c)
<input checked="" type="checkbox"/>	Public-Subnet-1	subnet-0ef34d5b9f0745473	10.0.0.0/24	-	rtb-05aaedc778693adde
<input type="checkbox"/>	Private-Subnet-1	subnet-0ee73bd2729e7a872	10.0.1.0/24	-	Main (rtb-00ab819f365999d5c)

Selected subnets

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VPC > Route tables > rtb-05d3aa15743505a88 > Edit subnet associations

Edit subnet associations

Change which subnets are associated with this route table.

Available subnets (2/4)

Name	Subnet ID	IPv4 CIDR	IPv6 CIDR	Route table ID
Private-Subnet-2	subnet-0bf6728f8eccbb87	10.0.3.0/24	-	Main (rtb-00ab819f365999d5c)
Public-Subnet-2	subnet-0b8c843f168338440	10.0.2.0/24	-	rtb-08237dad45babcb6be / Japanese-Public-Route
Public-Subnet-1	subnet-0ef34d5b9f0745473	10.0.0.0/24	-	rtb-08237dad45babcb6be / Japanese-Public-Route
Private-Subnet-1	subnet-0ee73bd2729e7a872	10.0.1.0/24	-	Main (rtb-00ab819f365999d5c)

Selected subnets

subnet-0bf6728f8eccbb87 / Private-Subnet-2 X subnet-0ee73bd2729e7a872 / Private-Subnet-1 X

Buttons: Cancel, Save associations

7. Add new route in the public route table (target: internet gateway)

VPC > Route tables > rtb-08237dad45babcb6be > Edit routes

Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
Q 0.0.0.0/0	igw-034fa9595ebfecc26	-	No

Buttons: Add route, Remove, Cancel, Preview, Save changes

8. Add new route in the private route table (target: NAT gateway)

VPC > Route tables > rtb-05d3aa15743505a88 > Edit routes

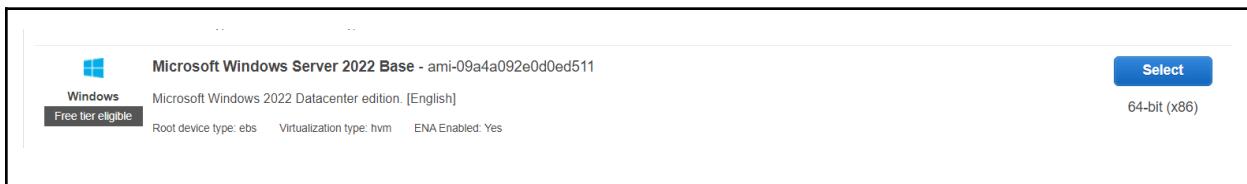
Edit routes

Destination	Target	Status	Propagated
10.0.0.0/16	local	Active	No
Q 0.0.0.0/0	nat-0bc413c647b16adc9	-	No

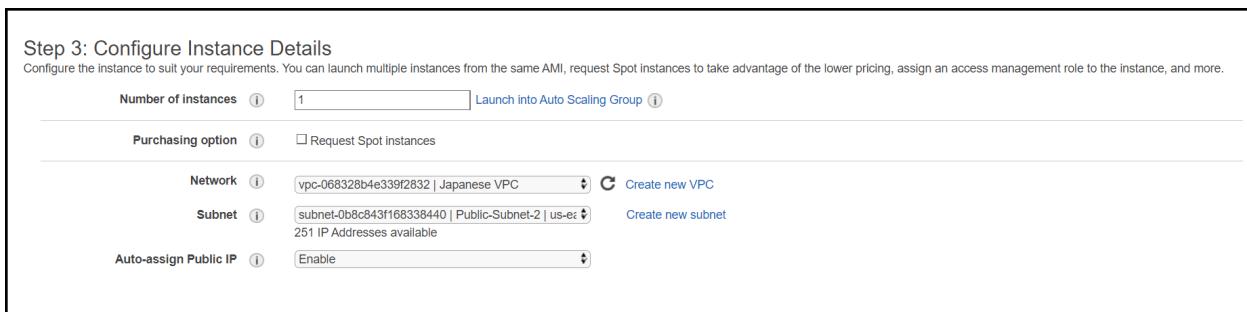
Buttons: Add route, Remove, Cancel, Preview, Save changes

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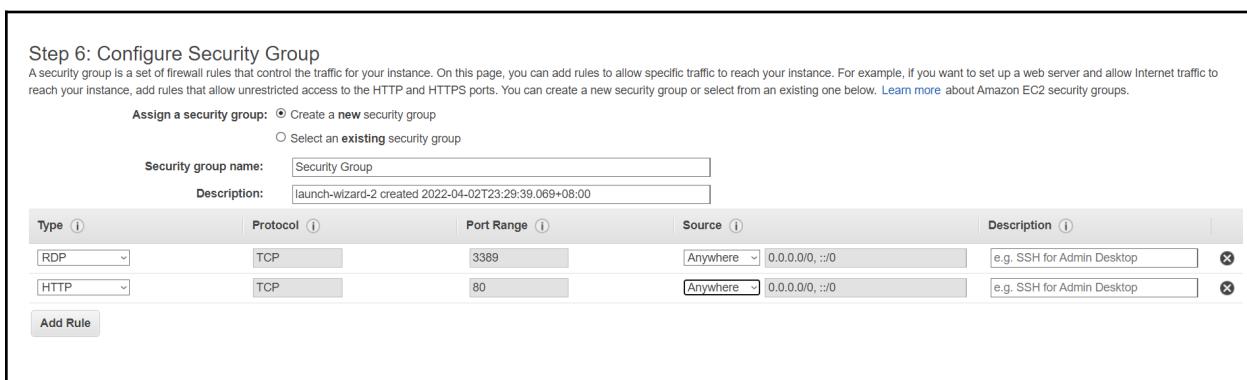
9. Create Instance, used below AMI



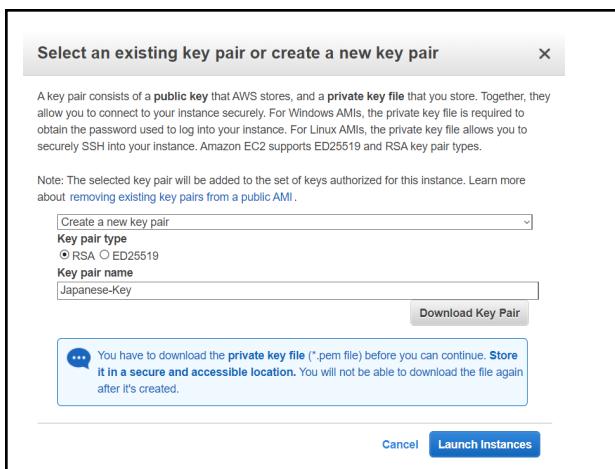
- Public Subnet 2 is chosen and enable auto assigned IP address



- Add one more rule which is HTTP and set the source to anywhere



- Create a new key pair and download it



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- Connect to instance and move to RDP client, and download the remote desktop file, then click get password

The screenshot shows the 'Connect to instance' section for an AWS Lambda instance. It includes tabs for 'Session Manager', 'RDP client' (which is selected), and 'EC2 Serial Console'. A note says: 'You can connect to your Windows instance using a remote desktop client of your choice, and by downloading and running the RDP shortcut file below:'. A 'Download remote desktop file' button is present. Below it, connection details are listed: Public DNS (ec2-52-71-254-229.compute-1.amazonaws.com) and User name (Administrator). There are also 'Password' and 'Get password' links.

- Insert the key pair which is in “pem” format

The screenshot shows the 'Get Windows password' section. It says: 'To decrypt the password, you will need your key pair for this instance.' A blue box highlights the 'Key pair associated with this instance' link, which points to 'Japanese-Key'. Below it, there's a 'Browse' button and a file selection area showing 'Japanese-Key.pem' (1.7KB). A note says: 'Or copy and paste the contents of the key pair below:' followed by a large text area containing the RSA PRIVATE KEY content.

```
-----BEGIN RSA PRIVATE KEY-----  
MIIEowlBAKCAQEA...  
Ym8tzncpr93EeEK9OwXtyhp4r4myzyDYC+YpYen45VfM090iB7mEa2VUOdbFsCK  
Mkt1SnBHjw8hdWS8vWNneRBrclVp6WzVCU80ZvgeckTdw4k52/Wrqm9192TQZ4fj  
cgh6klADpCknFV/i62kOfnRmn3fzSRNbVMdWYvWhoeJ8qkBZLhrNqdbbjOHCW9S  
b90JpYuQSwooh7zTGRgbDx/EMwf14mFxid36KLmff6sAQYRhMaFq1EWyT9U+3Dt  
wyNJ+AD1/5jEkzMlvM+MRll69mnikx+mQG1mqQIDAQABAoIBAA4BdG/0gkfGggn  
UsehOdOS4Ov36rCd1uPI2PezHp+r1AFe8yTqdRAys6RvxY1Yi6/O6mP5DPmd4Wia
```

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10. Create security group for database

Create security group [Info](#)

A security group acts as a virtual firewall for your instance to control inbound and outbound traffic. To create a new security group, complete the fields below.

Basic details

Security group name [Info](#)
DB-Security-Group
Name cannot be edited after creation.

Description [Info](#)
allow security

VPC [Info](#)
Q vpc-068328b4e339f2832 X

11. Create database subnet group and add private subnet

Subnet group details

Name
You won't be able to modify the name after your subnet group has been created.
Japanese-Subnet-Group
Must contain from 1 to 255 characters. Alphanumeric characters, spaces, hyphens, underscores, and periods are allowed.

Description
subnet

VPC
Choose a VPC identifier that corresponds to the subnets you want to use for your DB subnet group. You won't be able to choose a different VPC identifier after your subnet group has been created.
Japanese VPC (vpc-068328b4e339f2832) ▾

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Subnets

Choose the subnets that you want to add. The list includes the subnets in the selected Availability Zones.

Select subnets ▾

subnet-0bf6728f8eccbc87 (10.0.3.0/24) X

subnet-0ee73bd2729e7a872 (10.0.1.0/24) X

12. Database details

Summary

DB identifier japanese-db	CPU <div style="width: 7.05%;">7.05%</div>	Status Available	Class db.t2.micro
Role Instance	Current activity <div style="width: 0%;">0 Connections</div>	Engine MySQL Community	Region & AZ us-east-1a

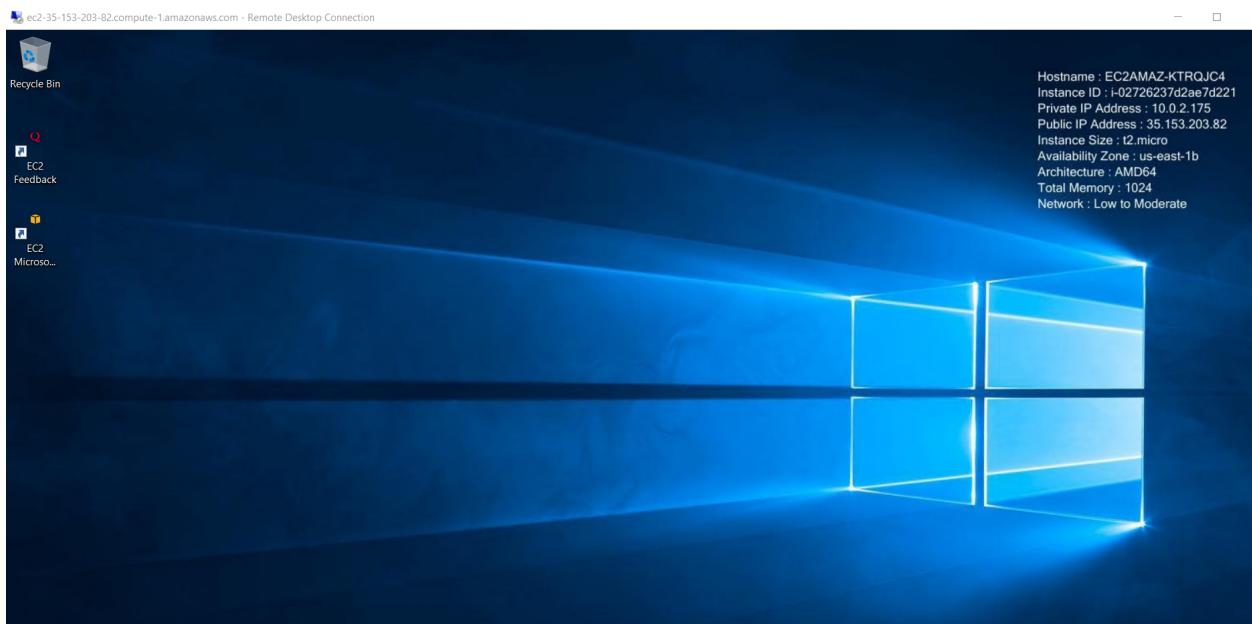
Connectivity & security Monitoring Logs & events Configuration Maintenance & backups Tags

Connectivity & security

Endpoint & port	Networking	Security
Endpoint japanese-db.czqqlvzreaj7.us-east-1.rds.amazonaws.com	Availability Zone us-east-1a	VPC security groups DB-Security-Group (sg-070727e09f4442669)
Port 3306	VPC Japanese VPC (vpc-068328b4e339f2832)	Active
	Subnet group japanese-subnet-group	Public accessibility Yes
	Subnets subnet-0ee73bd2729e7a872 subnet-0bf6728f8eccbc87	Certificate authority rds-ca-2019
		Certificate authority date August 23, 2024, 01:08 (UTC±1:08)

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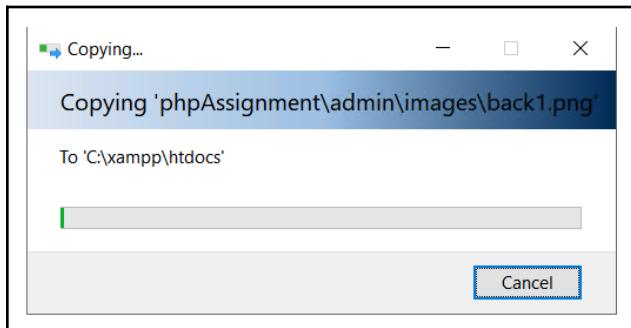
13. Connect to remote desktop



14. Download xampp in virtual machine, and start MYSQL

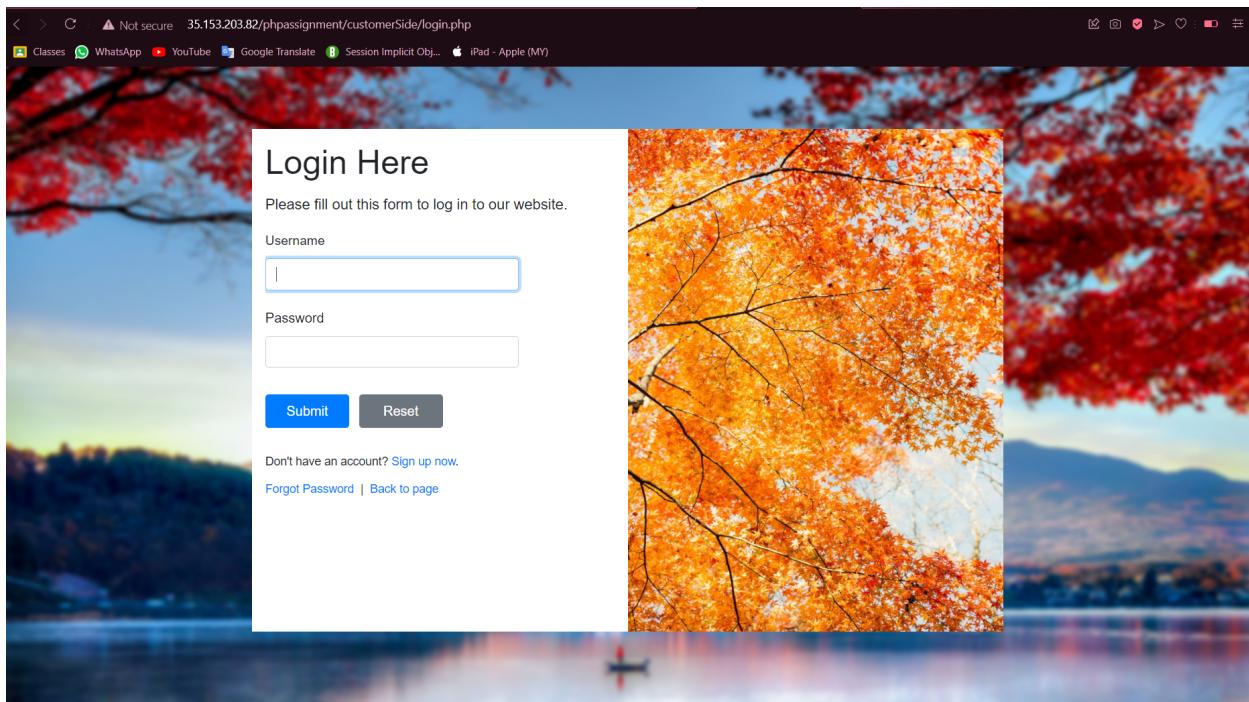
A screenshot of a web browser displaying the XAMPP download page. The page has a navigation bar with categories: ALL, IMAGES, VIDEOS, MAPS, NEWS, SHOPPING, and MORE. Below the navigation bar, there is a section for "XAMPP Downloadable Software". It features the XAMPP logo, a "Download" button, and links for "Features", "Forums", and "System requirements". Below this section, there is a heading "Download XAMPP - Apache Friends" with a link "https://www.apachefriends.org/download.html". A note below the link states: "XAMPP is an easy to install Apache distribution containing MariaDB, PHP, and Perl. Just download and start the installer. It's that easy. XAMPP for Windows 7.4.28, 8.0.17 & 8.1.4".

15. Copy the web project from default windows into virtual machine



AACS3253 Cloud Computing For Business

16. Form the url link in this format **http://<ip address>/< projectName >/page.php**

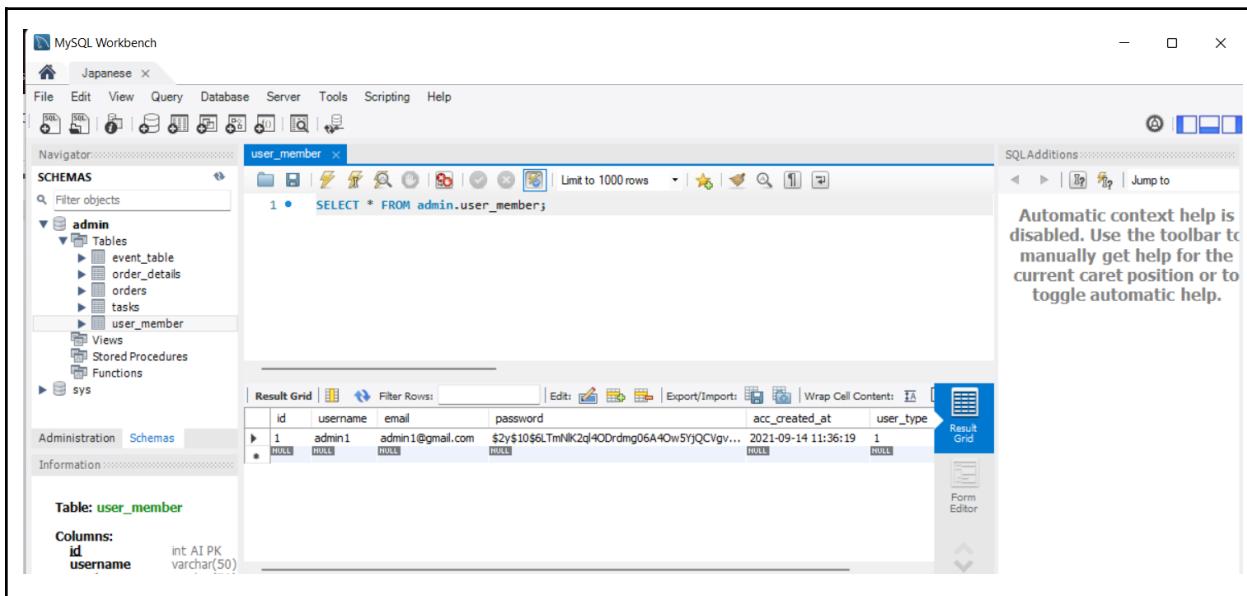


17. Connect with MYSQL workbench by entering the database details



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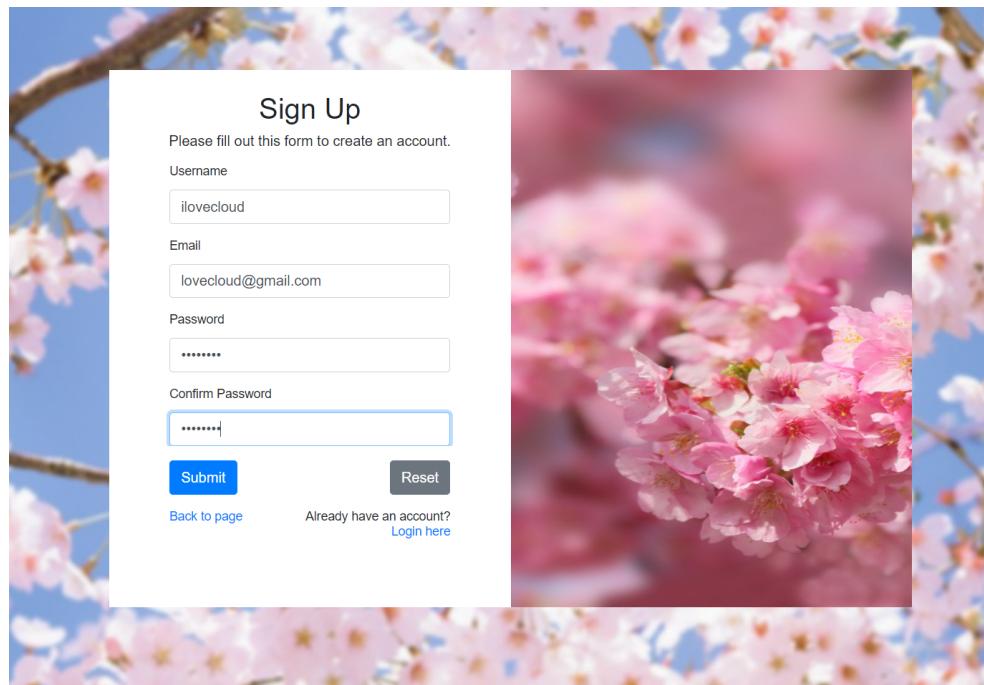
18. Import sql file into database



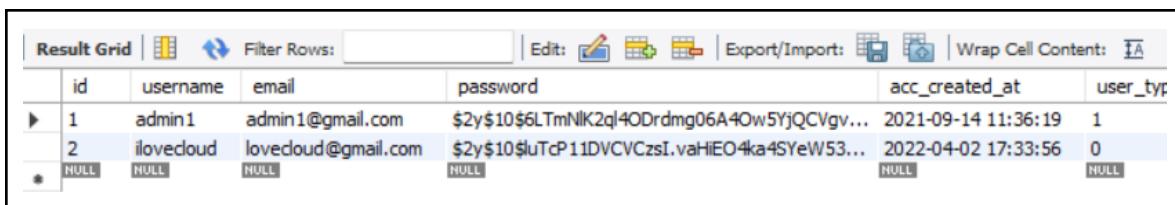
The screenshot shows the MySQL Workbench interface. In the Navigator pane, under the 'admin' schema, the 'user_member' table is selected. The SQL editor at the top contains the query: 'SELECT * FROM admin.user_member;'. The Result Grid pane displays the following data:

	id	username	email	password	acc_created_at	user_type
▶	1	admin1	admin1@gmail.com	\$2y\$10\$6LTmNIK2qj4ODrdmg06A4Ow5YjQCVgv...	2021-09-14 11:36:19	1
*	HULL	HULL	HULL	HULL	HULL	HULL

19. Test website and database can connect. So, I registered an account.



19. Data has successfully been inserted into the database. Prove everything works!



The screenshot shows the MySQL Workbench interface with the 'Result Grid' tab selected. The table structure is identical to the previous screenshot. The data now includes a third row for the new account:

	id	username	email	password	acc_created_at	user_type
▶	1	admin1	admin1@gmail.com	\$2y\$10\$6LTmNIK2qj4ODrdmg06A4Ow5YjQCVgv...	2021-09-14 11:36:19	1
*	2	ilovedcloud	lovedcloud@gmail.com	\$2y\$10\$uTcP11DVCVCzsI.vaHiEO4ka4SYeW53...	2022-04-02 17:33:56	0
*	HULL	HULL	HULL	HULL	HULL	HULL

Reference

2022. [online] Available at:

<<https://www.zarantech.com/blog/difference-between-aws-and-azure/>> [Accessed 3 April 2022].

Guru99. 2022. *Azure vs. AWS: What is the Difference Between AWS and Azure*. [online]

Available at: <<https://www.guru99.com/azure-vs-aws.html>> [Accessed 3 April 2022].

InterviewBit. 2022. *AWS vs Azure: Which One is Better?*. [online] Available at:

<<https://www.interviewbit.com/blog/aws-vs-azure/>> [Accessed 3 April 2022].

Amazon Web Services, Inc. 2022. *Amazon CloudWatch - Application and Infrastructure Monitoring*. [online] Available at: <<https://aws.amazon.com/cloudwatch/>> [Accessed 3 April 2022].

Azure.microsoft.com. 2022. *Azure Monitor | Microsoft Azure*. [online] Available at:

<<https://azure.microsoft.com/en-us/services/monitor/#overview>> [Accessed 3 April 2022].

Awsacademy.instructure.com. 2022. [online] Available at:

<<https://awsacademy.instructure.com/courses/13200/modules/items/1133429>> [Accessed 3 April 2022].

Awsacademy.instructure.com. 2022. [online] Available at:

<<https://awsacademy.instructure.com/courses/13200/modules/items/1133437>> [Accessed 3 April 2022].

Awsacademy.instructure.com. 2022. [online] Available at:

<<https://awsacademy.instructure.com/courses/13200/modules/items/1133450>> [Accessed 3 April 2022].

Awsacademy.instructure.com. 2022. [online] Available at:

<<https://awsacademy.instructure.com/courses/13200/modules/items/1133463>> [Accessed 3 April 2022].