



School of Computer Science and Engineering

(SCOPE)

Fall Semester 2025-26

CBS3005 - Cloud, Microservices and Applications

LAB ASSESSMENT 1

Submitted by-

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22BBS0183

Q1. Create and manage EC2 instances on AWS. Launch an application on an EC2 instance in one region and then migrate that instance to another region. Additionally, set up another EC2 instance to install MySQL, create a database (e.g., student or employee database), and perform basic SQL operations.

1) Launch Instance

The screenshot shows the AWS EC2 Instances page. The left sidebar navigation includes: EC2 (selected), Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images (AMIs, AMI Catalog), Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), and Network & Security (Security Groups).

The main content area displays the "Instance summary for i-09335ce957a4a7fd2 (22BBS0183)". The summary includes:

- Instance ID:** i-09335ce957a4a7fd2
- IPv6 address:** –
- Hostname type:** IP name: ip-172-31-39-155.ec2.internal
- Answer private resource DNS name:** IPv4 (A)
- Auto-assigned IP address:** 98.86.219.210 [Public IP]
- IAM Role:** –
- IMDSv2:** Required
- Operator:** –
- Public IPv4 address:** 98.86.219.210 [open address]
- Instance state:** Running
- Private IP DNS name (IPv4 only):** ip-172-31-39-155.ec2.internal
- Instance type:** t3.micro
- VPC ID:** vpc-092a8cb58c9137b99 [edit]
- Subnet ID:** subnet-0b2ec1178657d4afe [edit]
- Instance ARN:** arn:aws:ec2:us-east-1:533267317559:instance/i-09335ce957a4a7fd2
- Private IPv4 addresses:** 172.31.39.155
- Public DNS:** ec2-98-86-219-210.compute-1.amazonaws.com [open address]
- Elastic IP addresses:** –
- AWS Compute Optimizer finding:** Opt-in to AWS Compute Optimizer for recommendations. [Learn more]
- Auto Scaling Group name:** –
- Managed:** false

2) Connecting to the ubuntu server

```
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.8.0-1029-aws x86_64)

* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro

System information as of Wed Aug 6 16:22:57 UTC 2025

System load: 0.31 Temperature: -273.1 C
Usage of /: 25.4% of 6.71GB Processes: 118
Memory usage: 24% Users logged in: 0
Swap usage: 0% IPv4 address for ens5: 172.31.39.155

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

i-09335ce957a4a7fd2 (22BBS0183)

PublicIPs: 98.86.219.210 PrivateIPs: 172.31.39.155

3) Updating command

```
=====Scanning linux images...

Pending kernel upgrade!
Running kernel version:
  6.8.0-1029-aws
Diagnostics:
  The currently running kernel version is not the expected kernel version 6.14.0-1010-aws.

Restarting the system to load the new kernel will not be handled automatically, so you should consider rebooting.

Restarting services...
Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart getty@tty1.service
systemctl restart networkd-dispatcher.service
systemctl restart serial-getty@ttyS0.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
  ubuntu @ session #1: sshd[1069,1521]
  ubuntu @ user manager service: systemd[1416]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-39-155:~$ sudo systemctl start apache2
ubuntu@ip-172-31-39-155:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable apache2
ubuntu@ip-172-31-39-155:~$ echo "Hello from EC2-Yash Garg" | sudo tee /var/www/html/index.html
Hello from EC2-Yash Garg
ubuntu@ip-172-31-39-155:~$ 
```

i-09335ce957a4a7fd2 (22BBS0183)

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4) Setting up mysql and performing crud operations

```

mysql> CREATE DATABASE students;
Query OK, 1 row affected (0.03 sec)

mysql> USE students;
Database changed

mysql> CREATE TABLE student_info (
    ->     id INT AUTO_INCREMENT PRIMARY KEY,
    ->     name VARCHAR(50),
    ->     age INT
    -> );
Query OK, 0 rows affected (0.03 sec)

mysql> INSERT INTO student_info (name, age) VALUES ('Alice', 21), ('Bob', 22);
Query OK, 2 rows affected (0.01 sec)
Records: 2 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM student_info;
+----+-----+---+
| id | name | age |
+----+-----+---+
| 1  | Alice | 21 |
| 2  | Bob   | 22 |
+----+-----+---+
2 rows in set (0.00 sec)

mysql> INSERT INTO student_info (name, age) VALUES
    -> ('Cathy', 20),
    -> ('David', 23),
    -> ('Emma', 24),
    -> ('Frank', 22),
    -> ('Grace', 21),
    -> ('Hannah', 25),
    -> ('Isaac', 23),
    -> ('Julia', 22),

```

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```

-> ('Hannah', 25),
-> ('Isaac', 23),
-> ('Julia', 22),
-> ('Kevin', 21),
-> ('Liam', 24);
Query OK, 10 rows affected (0.00 sec)
Records: 10 Duplicates: 0 Warnings: 0

mysql> SELECT * FROM student_info;
+----+-----+---+
| id | name | age |
+----+-----+---+
| 1  | Alice | 21 |
| 2  | Bob   | 22 |
| 3  | Cathy | 20 |
| 4  | David | 23 |
| 5  | Emma  | 24 |
| 6  | Frank | 22 |
| 7  | Grace | 21 |
| 8  | Hannah| 25 |
| 9  | Isaac | 23 |
| 10 | Julia | 22 |
| 11 | Kevin | 21 |
| 12 | Liam  | 24 |
+----+-----+---+
12 rows in set (0.00 sec)

mysql> UPDATE student_info SET age = 25 WHERE name = 'Emma';
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> DELETE FROM student_info WHERE name = 'Frank';
Query OK, 1 row affected (0.01 sec)

mysql>

```

i-09335ce957a4a7fd2 (22BBS0183)
PublicIPs: 98.86.219.210 PrivateIPs: 172.31.39.155

5) Migrating from one region to another using AMI

The screenshot displays two pages from the AWS Management Console under the EC2 service.

Top Page: Amazon Machine Images (AMIs)

- Left Sidebar:** Shows navigation links for EC2 (Dashboard, Global View, Events, Instances, Images, Elastic Block Store, Network & Security).
- Content Area:** Title: "Amazon Machine Images (AMIs) (1) Info". A table lists one AMI:

Name	AMI ID	Source	Owner	Visibility	
yash	22BBS0183	ami-0931e6b6f3928bb74	533267317559/22BBS0183	533267317559	Private
- Bottom Section:** "Select an AMI" with a dropdown menu.

Bottom Page: Instances

- Left Sidebar:** Shows navigation links for EC2 (Dashboard, Global View, Events, Instances, Images, Elastic Block Store, Network & Security).
- Content Area:** Title: "Instances (1) Info". A table lists one instance:

Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 IP	Elastic IP	IP
t3.micro	Initializing	View alarms	ap-south-1b	ec2-3-109-211-196.ap...	3.109.211.196	-	-
- Bottom Section:** "Select an instance" with a dropdown menu.

Q2. Set up an S3 bucket in AWS, ensuring the name is globally unique. Upload your static website files (HTML, CSS, JavaScript, etc.) to this bucket. Enable static website hosting in the S3 bucket properties and configure the documents. Apply the necessary bucket policy to make your site publicly accessible. Also, enable versioning on the bucket to maintain previous versions of your website files.

creating s3 bucket

The screenshot shows the 'Create bucket' wizard on the AWS Management Console. In the 'General configuration' step, the 'Bucket name' is set to '22BBS0183'. Under 'Bucket type', 'General purpose' is selected. In the 'Object Ownership' step, 'ACLs disabled (recommended)' is selected. Both steps include detailed descriptions and links to learn more.

General configuration

Bucket name: 22BBS0183

Bucket type: General purpose

Object Ownership: ACLs disabled (recommended)

Success message: Successfully created bucket "22bbs0183". To upload files and folders, or to configure additional bucket settings, choose View details.

Uploading files to the bucket

Upload: status

After you navigate away from this page, the following information is no longer available.

Summary					
Destination s3://22bbs0183	Succeeded 3 files, 2.0 KB (100.00%)				
Failed 0 files, 0 B (0%)					
Files and folders	Configuration				
Files and folders (3 total, 2.0 KB)					
Find by name					
Name	Folder	Type	Size	Status	Error
error.html	-	text/html	250.0 B	Success Succeeded	-
index.html	-	text/html	761.0 B	Success Succeeded	-
style.css	-	text/css	1.0 KB	Success Succeeded	-

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Updating bucket policy

Bucket policy

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. [Learn more](#)

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "PublicReadGetObject",
      "Effect": "Allow",
      "Principal": "*",
      "Action": "s3:GetObject",
      "Resource": "arn:aws:s3:::22bbs0183/*"
    }
  ]
}
```

Object Ownership [Info](#)

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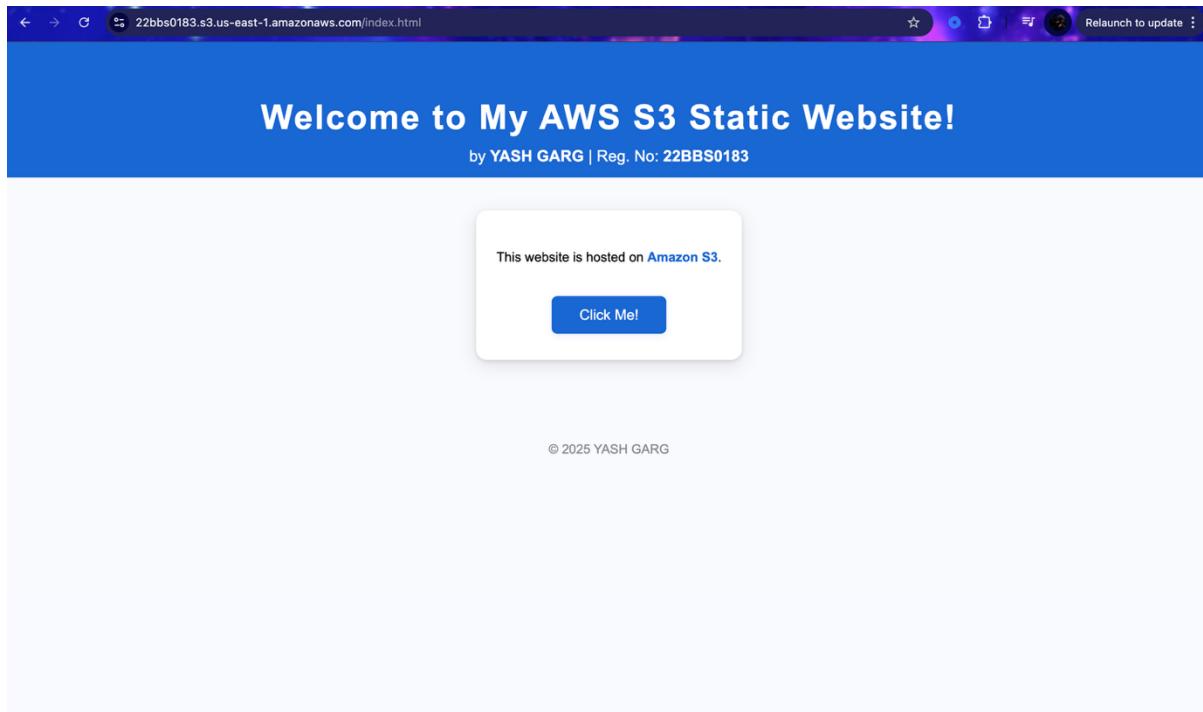
Website preview with code

The screenshot shows a comparison between the website's source code and its final rendered output. On the left, a code editor displays the `index.html` file with the following content:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Your Name - AWS S3 Static Website</title>
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <link rel="stylesheet" href="style.css">
</head>
<body>
    <header>
        <h1>Welcome to My AWS S3 Static Website!</h1>
        <p><strong>Your Name - AWS S3 Static Website</strong> | Reg. No: <strong>22BBS0183</strong></p>
    </header>
    <main>
        <div class="card">
            <p>This website is hosted on <span>Amazon S3</span>.</p>
            <button onclick="greet()">Click Me!</button>
        </div>
    </main>
    <footer>
        <p>© 2025 YASH GARG</p>
    </footer>
    <script src="script.js"></script>
</body>
</html>
```

On the right, the browser displays the rendered website with a blue header containing the title "Welcome to My AWS S3 Static Website!" and the user's registration number. Below the header is a card with the text "This website is hosted on Amazon S3." and a "Click Me!" button. At the bottom, there is a footer with the copyright notice "© 2025 YASH GARG".

Hosted on aws server



Thank You