

# **LAMBTON COLLEGE**



## **A Report on [Lab 1,2,3 on AWS Cloud Foundations]**

121 Brunel Rd, Mississauga

ON L4Z 3E9

A Group assignment with screenshots of Lab 1, 2, and 3

on Aws academy

Big Data Analytics DSMM

**Under the supervision  
of  
Professor Pedram Habibi**

**Submitted BY:**

Aadarsha Chapagain (C0825975)  
Davinderjit Singh (C0833117)  
Priti Bhale (C0835691)  
Milanjeet Kaur(C0829899)  
Palwinder Kaur (C0827804)  
Nimmo Usman (C0836309)

**Submitted To:**

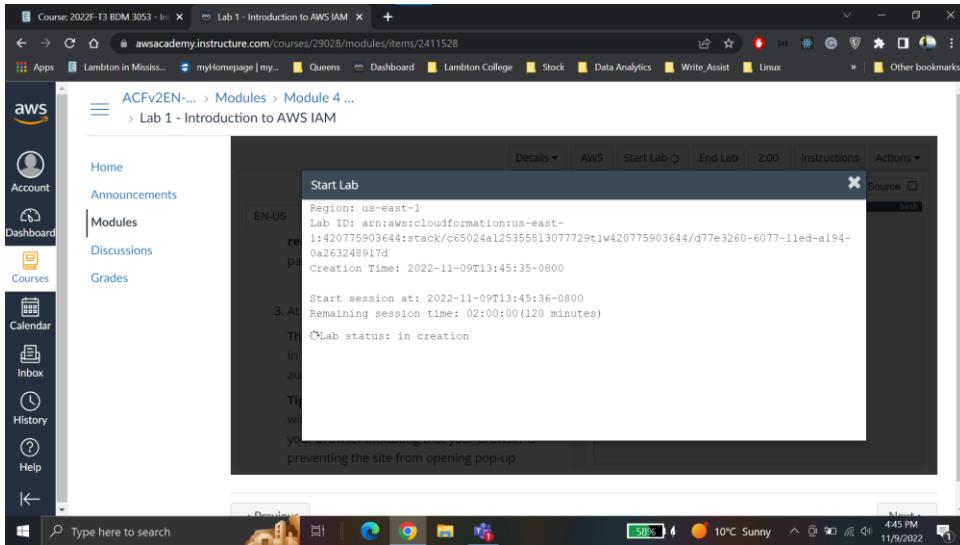
Lambton College  
Professor Pedram Habibi

**Submission Date:**

11<sup>th</sup> November 2022

# Lab1

## Start lab



## User list

A screenshot of the AWS IAM Management Console. The URL is "us-east-1.console.aws.amazon.com/iamv2/home?region=us-east-1#users". The left sidebar includes "Identity and Access Management (IAM)" with sections for Dashboard, Access management (User groups, Users, Roles, Policies, Identity providers, Account settings), and Access reports (Access analyzer, Archive rules). The main content area shows a table titled "Users (4) Info". The table has columns for User name, Groups, Last activity, MFA, and Password active. The data is as follows:

User name	Groups	Last activity	MFA	Password active
awsstudent	None	Never	None	None
user-1	None	Never	None	5 minutes ago
user-2	None	Never	None	5 minutes ago
user-3	None	Never	None	5 minutes ago

## User groups

The screenshot shows the AWS IAM Management Console with the URL [us-east-1.console.aws.amazon.com/iamv2/home#/groups](https://us-east-1.console.aws.amazon.com/iamv2/home#/groups). The left sidebar is titled 'Management (IAM)' and includes sections for Dashboard, Access management (User groups, Users, Roles, Policies, Identity providers, Account settings), and Access reports (Access analyzer, Archive rules). The main content area is titled 'User groups (3) Info' and contains a table with three entries:

Group name	Users	Permissions	Creation time
EC2-Admin	0	Defined	11 minutes ago
EC2-Support	0	Defined	11 minutes ago
S3-Support	0	Defined	11 minutes ago

## Effect, Action, resource

The screenshot shows the AWS IAM Management Console with the URL [us-east-1.console.aws.amazon.com/iamv2/home#/groups/details/EC2-Support?section=permissions](https://us-east-1.console.aws.amazon.com/iamv2/home#/groups/details/EC2-Support?section=permissions). The left sidebar is identical to the previous screenshot. The main content area shows the details for the 'AmazonEC2ReadOnlyAccess' policy:

**AmazonEC2ReadOnlyAccess**  
Provides read only access to Amazon EC2 via the AWS Management Console.

```
1 "Version": "2012-10-17",
2 "Statement": [
3     {
4         "Effect": "Allow",
5         "Action": "ec2:Describe",
6         "Resource": "*"
7     },
8     {
9         "Effect": "Allow",
10        "Action": "elasticloadbalancing:Describe",
11        "Resource": "*"
12    },
13    {
14        "Effect": "Allow",
15        "Action": "cloudwatch:ListMetrics",
16        "Resource": "*"
17    },
18    {
19        "Effect": "Allow",
20        "Action": "cloudwatch:GetMetricStatistics",
21        "Resource": "*"
22    },
23    {
24        "Effect": "Allow",
25        "Action": "autoscaling:Describe",
26        "Resource": "*"
27    }
28]
```

## Inline policy

The screenshot shows the AWS IAM Management Console. On the left, the navigation pane is open with 'Identity and Access Management (IAM)' selected. Under 'Access management', 'User groups' is also selected. In the center, a modal window titled 'EC2-Admin-Policy' displays the JSON code for the policy:

```
1 - [
2 -   "Version": "2012-10-17",
3 -   "Statement": [
4 -     {
5 -       "Action": [
6 -         "ec2:Describe",
7 -         "ec2:StartInstances",
8 -         "ec2:StopInstances"
9 -       ],
10 -      "Resource": [
11 -        "*"
12 -      ],
13 -      "Effect": "Allow"
14 -    }
15 -  ]
16 -]
```

At the bottom of the modal, there are 'Copy' and 'Edit' buttons. The status bar at the bottom of the screen shows the date and time as 11/9/2022.

## Business Scenario

### Add user-1 to S3

The screenshot shows the AWS IAM Management Console. The navigation pane on the left has 'User groups' selected under 'Access management'. In the center, a modal window titled 'S3-Support' shows the 'Summary' tab. The 'Users' tab is selected, displaying a table with one user entry:

User name	Groups	Last activity	Creation time
user-1	S3-Support	None	November 09, 2022, 16:46 (UTC-05:00)

At the top right of the modal, there are 'Delete' and 'Edit' buttons. The status bar at the bottom of the screen shows the date and time as 11/9/2022.

## Add user-2 to the EC2-Support Group

The screenshot shows the AWS IAM Management Console with the URL [us-east-1.console.aws.amazon.com/iamv2/home#/groups/details/EC2-Support?section=users](https://us-east-1.console.aws.amazon.com/iamv2/home#/groups/details/EC2-Support?section=users). The page displays the summary for the 'EC2-Support' user group. The 'Users' tab is selected, showing one user named 'user-2'. The 'Permissions' and 'Access Advisor' tabs are also visible. The left sidebar includes sections for Identity and Access Management (IAM), Access management, Access reports, and Feedback.

## Add user-3 to the EC2-Admin Group

The screenshot shows the AWS IAM Management Console with the URL [us-east-1.console.aws.amazon.com/iamv2/home#/groups/details/EC2-Admin?section=users](https://us-east-1.console.aws.amazon.com/iamv2/home#/groups/details/EC2-Admin?section=users). The page displays the summary for the 'EC2-Admin' user group. The 'Users' tab is selected, showing one user named 'user-3'. The 'Permissions' and 'Access Advisor' tabs are also visible. The left sidebar includes sections for Identity and Access Management (IAM), Access management, Access reports, and Feedback.

## User-1 has access to S3 bucket

The screenshot shows the AWS S3 console interface. On the left, a sidebar menu includes 'Buckets', 'Access Points', 'Object Lambda Access Points', 'Multi-Region Access Points', 'Batch Operations', 'Access analyzer for S3', 'Block Public Access settings for this account', 'Storage Lens' (with 'Dashboards' and 'AWS Organizations settings' sub-options), and a search bar at the bottom.

The main content area displays the details for the bucket 'samplebucket--d77e3260'. The 'Objects' tab is selected, showing '(0)' objects. Below this are buttons for 'Create folder' and 'Upload'. A search bar labeled 'Find objects by prefix' is present. At the bottom, there are filters for 'Name', 'Type', 'Last modified', 'Size', and 'Storage class'.

The browser address bar shows the URL: `s3.console.aws.amazon.com/s3/buckets/samplebucket--d77e3260?region=us-east-1&tab=objects`. The status bar at the bottom right indicates the user is 'user-1 @ 4207-7590-3644'.

## User-1 has no access to EC2 instance

The screenshot shows the AWS EC2 Management Console. The left sidebar includes 'New EC2 Experience' (with a note 'Tell us what you think'), 'EC2 Dashboard', 'EC2 Global View', 'Events', 'Tags', 'Limits', 'Instances' (selected), 'Images', and 'Elastic Block Store'. The 'Instances' section is expanded, showing 'Instances' (new), 'Instance Types', 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances' (new), 'Dedicated Hosts', 'Scheduled Instances', and 'Capacity Reservations'. The 'Images' section is also expanded, showing 'AMIs' (new) and 'AMI Catalog'. The 'Elastic Block Store' section is partially visible.

The main content area shows the 'Instances' page with a table header: 'Name', 'Instance ID', 'Instance state', 'Instance type', 'Status check', 'Alarm status', 'Availability Zone', and 'Public IPv4 DNS'. A message 'You are not authorized to perform this operation.' is displayed. Below the table is a modal window titled 'Select an instance' with a single option 'Select'.

The browser address bar shows the URL: `us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances`. The status bar at the bottom right indicates the user is 'user-1 @ 4207-7590-3644'.

## User-2 has access to EC2 instances

The screenshot shows the AWS EC2 Management Console. The left sidebar is collapsed, and the main area displays a table of instances. There are two rows:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4
Bastion Host	i-065236bf5caeafda	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-44-204-144-213.co...	44.204.144...
LabHost	i-05a7a23cd4e57c3e4	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-44-193-72-114.co...	44.193.72.114

A modal window titled "Select an instance" is open at the bottom of the table, listing the two instances.

## User-2 can stop Ec2 instances

The screenshot shows the AWS EC2 Management Console. The left sidebar is collapsed, and the main area displays a table of instances. A modal dialog box titled "Stop instance?" is open over the instance details for "LabHost".

The dialog contains the following text:  
Instance ID: i-05a7a23cd4e57c3e4 (LabHost)  
To confirm that you want to stop the instance, choose the Stop button below.

At the bottom of the dialog are two buttons: "Cancel" and "Stop".

The instance details shown in the background table are:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4
Bastion Host	i-065236bf5caeafda	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-44-204-144-213.co...	44.204.144...
LabHost	i-05a7a23cd4e57c3e4	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a	ec2-44-193-72-114.co...	44.193.72.114

## User-2 does not have access to S3

The screenshot shows the AWS S3 Management Console with the URL [s3.console.aws.amazon.com/s3/buckets?region=us-east-1](https://s3.console.aws.amazon.com/s3/buckets?region=us-east-1). The left sidebar includes links for Buckets, Access Points, Object Lambda Access Points, Multi-Region Access Points, Batch Operations, and Access analyzer for S3. Under Storage Lens, there are links for Dashboards and AWS Organizations settings. The main area displays an 'Account snapshot' with a note about storage usage and activity trends. A table titled 'Buckets' shows one entry: 'No buckets'. At the bottom right of the table is a 'Create bucket' button. The status bar at the bottom indicates it's 5:24 PM on November 9, 2022.

## User -3 is able to stop EC2 instance

The screenshot shows the AWS EC2 Management Console with the URL [us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#InstancesinstanceState=running](https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#InstancesinstanceState=running). The left sidebar lists New EC2 Experience, EC2 Dashboard, EC2 Global View, Events, Tags, Limits, Instances (with a 'New' badge), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances (with a 'New' badge), Dedicated Hosts, Scheduled Instances, Capacity Reservations, Images (with a 'New' badge), AMI Catalog, and Elastic Block Store. The main area shows a list of instances with columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, and Public IPv6. One instance, 'i-05a7a23cd4e57c3e4 (LabHost)', is selected. A modal dialog titled 'Stop instance?' is open, asking for confirmation to stop the instance. The status bar at the bottom indicates it's 5:27 PM on November 9, 2022.

## Conclusions for Lab1

- Explored pre-created IAM users and groups
- Inspected IAM policies as applied to the pre-created groups
- Followed a real-world scenario, adding users to groups with specific capabilities enabled
- Located and used the IAM sign-in URL
- Experimented with the effects of policies on service access

# Lab 2: Build your VPC and Launch a Web Server

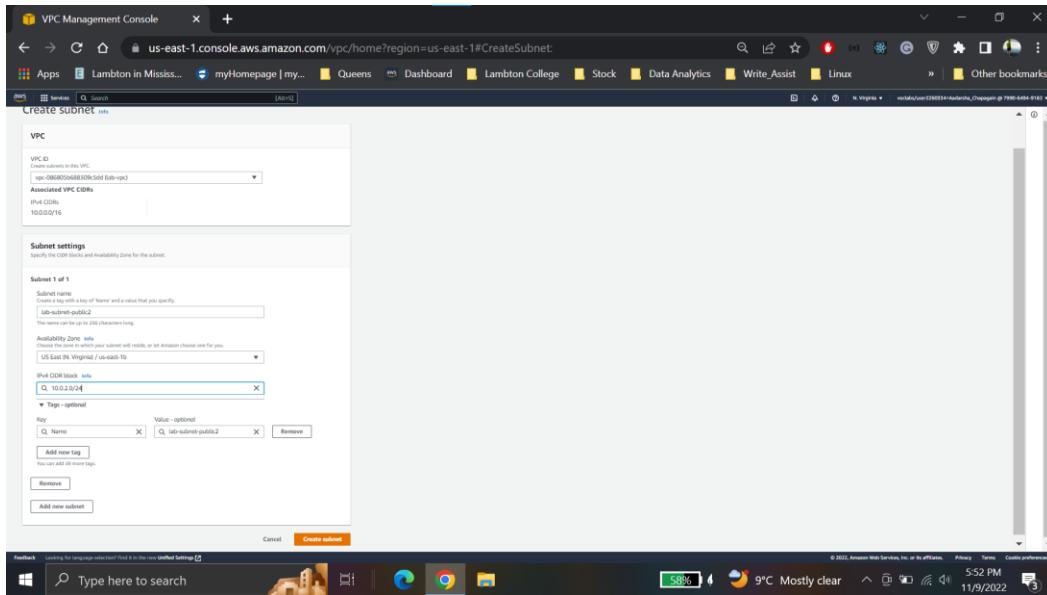
## Create VPC

The screenshot shows the 'Create VPC' wizard in the AWS VPC Management Console. On the left, there's a sidebar with 'VPC settings' and sections for 'Resources to create', 'Name tag auto-generation', 'IPv4 CIDR block', 'IPv6 CIDR block', and 'Tenancy'. The main area is titled 'Preview' and shows a visual representation of the resources being created. It includes a 'VPC' section with 'Show details' and 'Subnets (4)' and 'Route tables (3)'. Below this, there are sections for 'us-east-1a' and 'us-east-1b' each containing two subnets and three route tables. A large orange 'Create VPC' button is at the bottom.

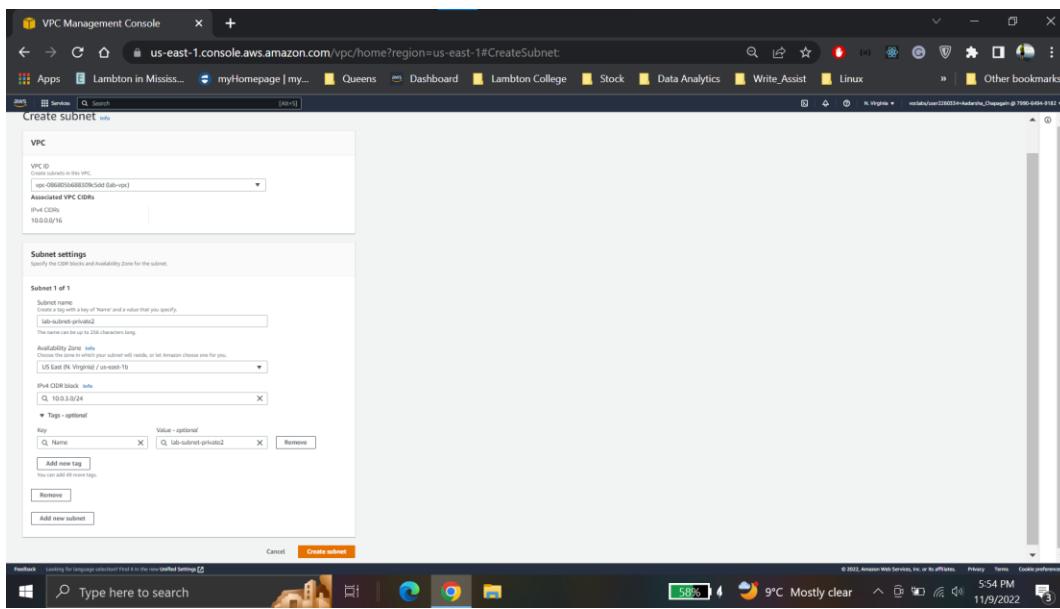
## Configuration for VPC

This screenshot shows the same 'Create VPC' wizard but with different configuration choices. In the 'Resources to create' section, 'VPC only' is selected instead of 'VPC and more'. The 'Subnets (2)' section shows 'us-east-1a' with 'lab-subnet-public1-us-east-1a' and 'lab-subnet-private1-us-east-1a'. The 'Route tables (2)' section shows 'lab-rtb-public' and 'lab-rtb-private1-us-east-1a'. The 'Network connections (2)' section shows 'lab-igw' and 'lab-nat-public1-us-east-1a'. The 'Create VPC' button is also orange.

## Create Second public subnet



## Create Second private subnet



## Create Security groups

VPC Management Console

us-east-1.console.aws.amazon.com/vpc/home?region=us-east-1#CreateSecurityGroup:

Web Security Group

Description: Enable HTTP access

VPC: vpc-008085048809c5dd

Inbound rules:

- Type: HTTP
- Protocol: TCP
- Port range: 80
- Source: Anywhere (IPv4)
- Description: Permit web requests

Add rule

Outbound rules:

- Type: All traffic
- Protocol: All
- Port range: All
- Destination: Custom
- Description: 0.0.0.0/0

Add rule

Tags - optional

No tags associated with the resource.

Add new tag

You can add up to 50 more tags

Create security group

## Launch a webserver

Launch an instance | EC2 Manager

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

EC2 > Instances > Launch an instance

Launch an instance

Number of instances: 1

Software Image (AMI): Amazon Linux 2 Kernel 5.10 AMI... (arn:aws:ami:amazonlinux:2022.03.0)

Virtual server type (instance type): t2.micro

Firewall (security group): Web Security Group

Storage (volumes): 1 volume(s) - 8 GiB

Search our full catalog including 1000s of application and OS images

Recent AMIs: Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE, Browse more AMIs

Amazon Machine Image (AMI)

AmazonLinux 2 AMI (HVM - Kernel 5.10, SSD Volume Type)

Launch Instance

Feedback

6:15 PM 11/9/2022

[Launch an instance | EC2 Manager](#)

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

Instance type: t2.micro (Free tier eligible)

Key pair (login): vockey

Network settings: VPC - public info, Subnet: subnet-0449775ed5c497387, Auto-assign public IP: Disable

Software image (AMI): Amazon Linux 2 Kernel 5.10 AMI... (ami-0963b32746c56faa)

Virtual server type (instance type): t2.micro

Firewall (security group): Web Security Group

Storage (volumes): 1 volume(s) - 8 GB

Summary: Number of instances: 1

Launch Instance

Feedback: Looking for language selector? Find it in the new Unified Settings.

Type here to search

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58% 8°C Clear 6:23 PM 11/9/2022

[Launch an instance | EC2 Manager](#)

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

Metadata accessible info: Select

Metadata version info: Select

Metadata response hop limit info: Select

Allow tags in metadata info: Select

User data info:

```
#!/bin/bash
# Install Apache Web Server and PHP
curl -sS https://getcomposer.org/installer | php -- --install-dir=/usr/local/bin --filename=composer
# Download Lab App
wget https://aws-tc-lab-objects.s3.us-west-2.amazonaws.com/CJLR-TF-100-ACCLFO-2/z-lab2-vpc/z3/lab-app.zip
unzip lab-app.zip -d /var/www/html/
# Turn on web server
chikorify httpd on
service httpd start
```

Number of instances: 1

Software Image (AMI): Amazon Linux 2 Kernel 5.10 AMI... (ami-0963b32746c56faa)

Virtual server type (instance type): t2.micro

Firewall (security group): Web Security Group

Storage (volumes): 1 volume(s) - 8 GB

Summary: Number of instances: 1

Launch Instance

Feedback: Looking for language selector? Find it in the new Unified Settings.

Type here to search

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58% 8°C Clear 6:23 PM 11/9/2022

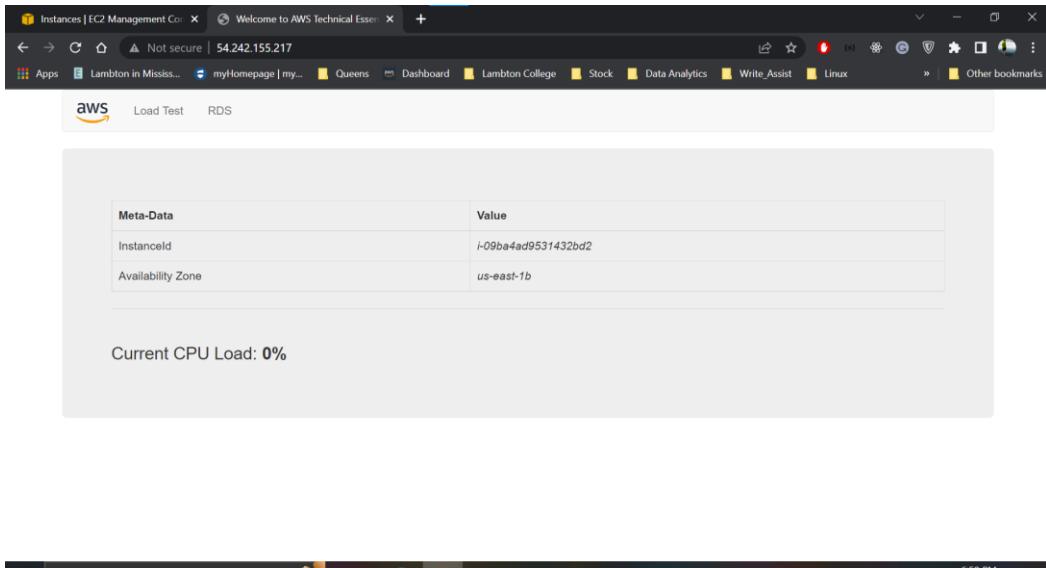
## Webserver 1 instance created

The screenshot shows the AWS EC2 Management Console interface. On the left, there's a navigation sidebar with links like 'EC2 Dashboard', 'EC2 Global View', 'Events', 'Tags', 'Limits', 'Instances' (selected), 'Images', 'AMIs', 'Elastic Block Store', and 'Feedback'. The main content area displays a table titled 'Instances (2) Info' with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, Public IPv4 IP, and Elastic IP. Two instances are listed: 'Bastion Host' (i-08037201d98dd1192, Running, t2.micro, 2/2 checks passed, No alarms, us-east-1a, ec2-35-173-202-71.com, 35.173.202.71) and 'Web Server 1' (i-073558e23c7047685, Pending, t2.micro, -, No alarms, us-east-1b, -, -). Below the table, a modal window titled 'Select an instance' is open, showing the same two instances. The bottom of the screen shows a taskbar with icons for File Explorer, Task View, Edge, and Google Chrome, along with system status indicators like battery level (58%), temperature (8°C), and date/time (6:24 PM, 11/9/2022).

## Public DNS of instance

This screenshot shows the same EC2 Management Console interface as the previous one, but it has zoomed into the details of the 'Web Server 1' instance. The main content area now displays the 'Instance: i-09ba4ad9531432bd2 (Web Server 1)' page. It includes sections for 'Instance summary' and 'Info'. Under 'Instance summary', it shows the Instance ID (i-09ba4ad9531432bd2 (Web Server 1)), Public IPv4 address (54.242.155.217), Private IPv4 address (10.0.2.28), Instance state (Pending), and Private IP DNS name (IPv4 only). The bottom of the screen shows the same taskbar and system status indicators as the previous screenshot.

## Webserver launched successfully



## Conclusion for Lab 2:

- A VPC was created.
- Multiple private and public subnets were created.
- A security group was created.
- A Ec2 instance was launched on create VPC and webserver was launched.

# Lab 3 Introduction to Amazon EC2

## Launch Ec2 instance with webserver

The screenshot shows the AWS EC2 Management Console. The left sidebar is collapsed, and the main area displays the 'Instances (2) Info' table. The table has columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability zone. Two instances are listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability zone
Bastion Host	i-0bc7088f2626f4d8c	Running	t2.micro	2/2 checks passed	No alarms	us-east-1
Web Server	i-0b6b4ac761c75c03d	Running	t2.micro	-	No alarms	us-east-1

A modal window titled 'Select an instance' is open at the bottom, showing the same list of instances.

## Get instance screenshot

The screenshot shows the AWS EC2 Management Console with the path 'EC2 > Instances > i-0b6b4ac761c75c03d > Get instance screenshot'. A modal window titled 'Get instance screenshot' is open, displaying a terminal session for the instance. The terminal output shows the following text:

```
Amazon Linux 2
Kernel 5.10.144-127.601.amzn2.x86_64 on an x86_64

[ 40.04443] xfs filesystem being remounted at /tmp supports timestamps until 2038 (0x7fffffff)
[ 40.06810] xfs filesystem being remounted at /var/tmp supports timestamps until 2038 (0x7fffffff)
```

## Permit HTTP traffic into EC2 instance

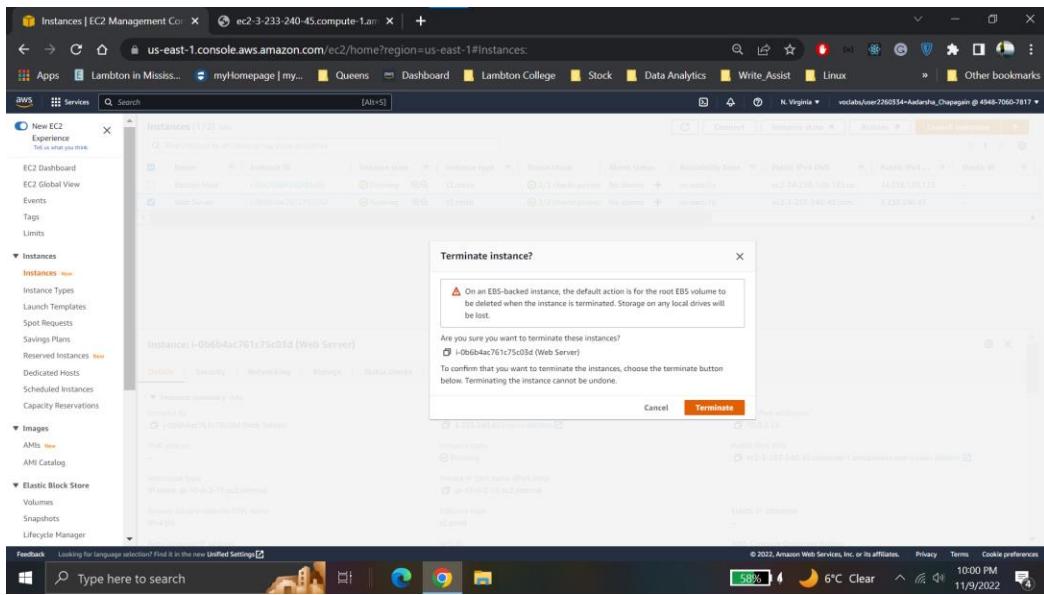
The screenshot shows the AWS EC2 Management Console with the URL <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyInboundSecurityGroupRules/securityGroupRules>. The page title is "Edit inbound rules". It displays a table of inbound rules with one entry: "HTTP" (Type), "TCP" (Protocol), port range "80" (Port range), and "Anywhere" (Source). A "Description - optional" field is empty. At the bottom, there are "Cancel", "Preview changes", and a prominent orange "Save rules" button.

## Modify instance type from t2.micro to t2.small and storage from 8 to 10

The screenshot shows the AWS EC2 Management Console with the URL <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#instanceDetails:instanceId=i-0b6b4ac761c75c03d>. The page title is "Instance summary for i-0b6b4ac761c75c03d (Web Server)". The "Storage" tab is selected. Key details shown include:

- Public IPv4 address: 3.233.240.45
- Instance state: Running
- Private IP DNS name: ip-10-0-2-15.ec2.internal
- Instance type: t2.small
- Volume ID: vol-098e7da182d77d015 (Device name: /dev/xvda, Volume size (GiB): 10, Attachment status: Attached, Attachment time: Wed Nov 09 2022 21:29:37, Encrypted: No, KMS key ID: -, Delete on termination: Yes)

## Terminate instance



## Lab 3 conclusion

- Launched a web server with termination protection enabled
- Monitored Your EC2 instance
- Modified the security group that your web server is using to allow HTTP access
- Resized your Amazon EC2 instance to scale
- Explored EC2 limits
- Tested termination protection
- Terminated your EC2 instance