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School of Computer Science, Engineering and Applications(SCSEA)
B.C.A. TY (CCSA)
Subject : Infrastructure Orchestration (P)

Name of the Student: Prakhar Anil Sharma

PRN: 20220801121

Title of Practical : Vertical Scaling of EC2 Instance Type

Step 1: Launch an EC2 Instance

1. Go to EC2 service and click on Launch Instance.
2. Give a name to the EC2 instance.

Step 2: Select AMI

1. Select the AMI for your instance

The screenshot shows the AWS Lambda console with the 'Create New Function' wizard. The first step, 'Select a template', is selected. A modal window titled 'AWS Lambda Function Template' is open, showing the 'Hello World' template. The modal includes a description of the template and a 'Next Step' button.

Step 3: Create a Key Pair

1. Create a new Key Pair:
 - o Click on Create New Key Pair.
 - o Save the key pair to your local machine.

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The screenshot shows the 'Launch an instance | EC2 | ap-south-1' wizard on the AWS console. The 'Instance type' step is selected. A callout box highlights the 'Free tier eligible' section for the t2.micro instance type, which includes details like 1 vCPU, 1 GB Memory, and current generation: true. It also lists On-Demand, Reserved, and Spot pricing options. The 'Number of instances' field is set to 1. The 'Software Image (AMI)' is Canonical, Ubuntu, 24.04, amd64. The 'Virtual server type (instance type)' is t2.micro. The 'Firewall (security group)' is set to 'default'. Under 'Storage (volumes)', it shows 1 volume(s) - 8 GiB. A tooltip for the 'Free tier' indicates it covers 750 hours of t2.micro usage per month. At the bottom right are 'Cancel', 'Launch Instance', and 'Preview code' buttons.

The screenshot shows the 'Launch an instance | EC2 | ap-south-1' wizard on the AWS console. The 'Network settings' step is selected. It shows the 'Network' (vpc-08ffe06795a9ec200) and 'Subnet' (No preference) configurations. Under 'Firewall (security groups)', it shows a selected security group 'sg-0a2615747a0a4cadc' (VPC: vpc-08ffe06795a9ec200). A tooltip for the 'Free tier' indicates it covers 750 hours of t2.micro usage per month. At the bottom right are 'Cancel', 'Launch Instance', and 'Preview code' buttons.



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Step 5: Stop the EC2 Instance

1. Navigate to the User Data section in Advanced Settings.
2. Paste the below code in the box

```
#!bin/bash
```

```
sudo apt update -y
```

```
sudo apt upgrade -y
```

```
sudo apt install apache2 -y
```

```
sudo systemctl start apache2
```

```
sudo systemctl enable apache2
```

```
echo "<h1>This Message is from $(hostname -f)</h1>" >
```

```
/var/www/html/index.html
```

The screenshot shows the AWS CloudFormation Launch Stack interface. In the 'User data - optional' section, there is a text input field containing the provided user data script. A tooltip for the 'Free tier' is visible on the right side of the screen, explaining the included resources for the first year.

Step 5: Launch the Instance

1. Click on **Launch Instance** to start the EC2 instance.



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Step 6: Launch the Instance

1. Click on Launched Instance and copy its public IPv4 address and paste it in new tab

The screenshot shows the AWS EC2 Instances details page for instance i-05f9bc18732c6fb83f. The instance is running and has a public IP address of 43.204.237.198. Other details include a private IP of 172.31.15.83, an AMI ID of ami-0dee22c13ea7a9a67, and an instance type of t2.micro.

You will see a message with an ip address.

The screenshot shows a browser window with the URL 43.204.237.198. A message at the top of the page reads "This Message is from ip-172-31-15-83.ap-south-1.compute.internal".

Step 7: Stop the EC2 Instance

1. Navigate to the **EC2 instance** we just created.
2. Click on the **Instance State** dropdown button and select **Stop Instance**.



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The screenshot shows the AWS EC2 Instances page. The left sidebar includes options like 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), Network & Security (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), and Load Balancing. The main pane displays 'Instances (1/2) Info' with a search bar and filters for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. Two instances are listed: 'i-1121-Vertical...' (Running, t2.micro, 2/2 checks passed, View alarms, Instance ID: i-05f9bc18732c6fb83f) and 'S3-IAM-1121' (Terminated, t2.micro, View alarms, Instance ID: i-006c617496621dc72). On the right, there are buttons for Stop instance, Start instance, Reboot instance, Hibernate instance, and Terminate (delete) instance. The URL is ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#instances.

3. In the popup, click the **Stop** button

The screenshot shows the 'Stop instance' confirmation dialog box over the EC2 Instances page. The dialog box contains the following text: 'Stopping your instance allows you to reduce costs, modify settings, and troubleshoot problems.' It has fields for 'Instance ID' (i-05f9bc18732c6fb83f (1121-Vertical-Scaling)) and 'Stop protection' (radio button set to 'Off (Can stop instance)'). A warning message states: 'You will be billed for associated resources' and 'After you stop the instance, you are no longer charged usage or data transfer fees for it. However, you will still be billed for associated Elastic IP addresses and EBS volumes.' At the bottom, there are 'Cancel' and 'Stop' buttons. The URL is ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#instances.



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4. Wait for the instance to stop.

The screenshot shows the AWS EC2 Instances page. At the top, a green banner displays the message "Successfully initiated stopping of i-05f9bc18732c6f83f". The main table lists two instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
i-05f9bc18732c6f83f	i-05f9bc18732c6f83f	Stopped	t2.micro	-	View alarms +	ap-south-1b	-	-	-
i-06cd517496621dc72	i-06cd517496621dc72	Terminated	t2.micro	-	View alarms +	ap-south-1b	-	-	-

Step 8: Change the Instance Type

1. After the instance is stopped, click on the **Actions** dropdown tab.
2. Click on **Instance Settings**, then select **Change Instance Type**.



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The screenshot shows the AWS EC2 Instances page. A success message at the top left says "Successfully initiated stopping of i-05f9bc18732c6f83f". The main table lists two instances: one stopped (t2.micro) and one terminated (t2.micro). On the right, a context menu is open over the first instance, with "Actions" expanded to show options like "Change instance type", "Change CPU options", etc.

3. In the **Change Instance Type** section, find the **New Instance Type** field.
4. Select the desired instance type (e.g., t3.medium), then scroll down and click on the **Change** button.



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The screenshot shows the 'Change instance type' page in the AWS EC2 console. The instance ID is i-05f9bc18732c6f83f (1121-Vertical-Scaling). The current instance type is t2.micro. A dropdown menu is open under 'New instance type' showing 't3.medium'. Other options like t2.small, t2.medium, t3.small, t3.large, and t3.xlarge are also listed. Below the dropdown, there's a note about EBS-optimized being enabled by default for this instance type.

The screenshot shows the 'Instances' page in the AWS EC2 console. A success message at the top says 'Instance type changed successfully'. The table lists two instances: one with Instance ID i-05f9bc18732c6f83f, Instance State Stopped, Instance Type t3.medium, and another with Instance ID i-0d6c617496621dc72, Instance State Terminated, Instance Type t2.micro. The left sidebar shows navigation links for Dashboard, EC2 Global View, Events, Instances, 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, Network & Security, Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces, and Load Balancing.



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The screenshot shows the AWS EC2 Instances details page for an instance named i-05f9bc18732c6f83f. The instance is currently stopped. Key details include:

- Instance ID:** i-05f9bc18732c6f83f
- Public IPv4 address:** -
- Private IPv4 address:** 172.31.15.83
- IP name:** ip-172-31-15-83.ap-south-1.compute.internal
- Hostname type:** Private IP DNS name (IPv4 only)
- Instance type:** t3.medium
- VPC ID:** vpc-08ffe06795a9ec200
- Subnet ID:** subnet-0ef756fee7b64093
- Instance ARN:** arn:aws:ec2:ap-south-1:891377273858:instance/i-05f9bc18732c6f83f
- AMI ID:** ami-0dee22c13ea7a9a67
- Platform:** Ubuntu
- AMI name:** ubuntu/images/hvm-ssd/gp3/ubuntu-noble-24.04-amd64-server-20240927
- Launch time:** Wed Nov 13 2024 01:23:49 GMT+0530 (India Standard Time) (13 minutes)
- Monitoring:** disabled
- Termination protection:** Disabled
- AMI location:** amazon/ubuntu/images/hvm-ssd/gp3/ubuntu-noble-24.04-amd64-server-20240927

Step 9: Start the EC2 Instance

1. Go back to the **EC2 instance**.
2. Click on **Change Instance State**, and then select **Start Instance** to start the EC2 instance.



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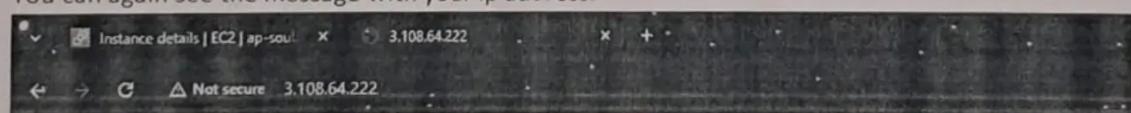
The screenshot shows the AWS CloudWatch Metrics Insights interface. The search bar at the top contains the query: `aws.ec2.DescribeInstances | sort by instanceId asc | limit 100000`. The results table below has the following columns: Name, Instance ID, Instance State, Instance Type, Status Check, Alarm Status, Availability Zone, Public IPv4 DNS, Public IPv4, and Elastic IP. There are two rows of data:

Name	Instance ID	Instance State	Instance Type	Status Check	Alarm Status	Availability Zone	Public IPv4 DNS	Public IPv4	Elastic IP
1121-Vertical-Scaling	i-0599bc18732c6f83	Running	t2.medium	OK	ok	ap-south-1	ec2-3-108-64-222.ap-south-1	3.108.64.222	-
53-404-1121	i-060018732c6f83	Terminated	t2.micro	-	-	ap-south-1	-	-	-

3. Verify that the EC2 instance type has been successfully changed from t2.micro to t2.medium in the details.

4. Now again copy the public IPv4 address and paste it in the new tab.

You can again see the message with your ip address.



This Message is from ip-172-31-15-83.ap-south-1.compute.internal

[Handwritten signature]
28/11/24

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