Weekly Activity#2

Progress Report: AWS EC2 and S3 Implementation

Date: April 29, 2025

To: Project Manager

From: Sahil Sharma

Subject: Status Update on AWS EC2 Virtual Server and S3 Data Storage Implementation

Project Overview:

As a part of the initiative emigrate academic statistics processing and garage to the cloud, this undertaking makes a speciality of deploying a digital server the use of AWS EC2 and setting up a dependent records repository in AWS S3. The goal is to make sure scalable, steady, and green managing of datasets while adhering to quality practices in cloud architecture.

Key Accomplishments:

- EC2 Instance Deployment
- A virtual server (Instance ID: i-0588c70d695df587a) was successfully launched in the US East (N. Virginia) region.

Specifications:

- Instance Type: t2.micro (cost-effective for initial testing).
- Network Configuration: Assigned a public IPv4 address (3.238.108.10) and private IP (172.31.8.8) for secure internal communication.
- VPC Setup: A dedicated Virtual Private Cloud (Academic-Vol-SahilSharma, VPC ID: vpc-0606z3b2cf24aef16) was configured with a CIDR block of 172.31.0.0/16, ensuring network isolation.

Security and Compliance:

- Security Group: Academic-SG-SahilSharma (ID: sg-0bf72259a5c832807) was created to manage inbound/outbound traffic. This restricts unauthorized access while allowing necessary protocols for data transfer.

- IAM Access Analyzer: Enabled for S3 to monitor resource permissions and ensure compliance with least-privilege principles.

S3 Bucket Configuration:

- A general-purpose bucket named academic-raw-mah was created in us-east-1 to store raw datasets.
- Storage Monitoring: AWS Storage Lens was activated to track storage usage trends and optimize costs.

Project Documentation & Collaboration:

- A structured directory (Group 8 - Academic > Week #2 > Academic Data Team > Design) was established on AWS for team collaboration.
- The Academic Data Lake Design document was uploaded and updated by Saha Sharma, outlining the architecture for data ingestion and processing.
- Supplementary diagrams (fishbone and Draw.io) were created to visualize workflows and dependencies, ensuring alignment across stakeholders.

Challenges & Mitigation:

- Initial VPC Configuration Complexity: The custom VPC setup required careful subnet and routing table configurations. This was resolved by leveraging AWS's default DHCP and route table settings for simplicity.
- Security Group Rules: Initially, overly restrictive rules blocked SSH access. Adjustments were made to permit SSH (port 22) from trusted IP ranges.

Next Steps:

- Data Migration: Begin transferring academic datasets to the academic-raw-mah bucket using AWS CLI/SDKs.
- Automation: Implement lifecycle policies in S3 to archive older data to Glacier, reducing storage costs.
- EC2 Scaling: Monitor instance performance and upgrade to a larger instance type if CPU/memory usage exceeds thresholds.
- Access Controls: Finalize IAM roles and bucket policies to grant granular access to team members.

Conclusion:

The foundational AWS infrastructure is now operational, with EC2 and S3 components securely configured. The team is positioned to proceed with data processing tasks and further optimizations. Regular audits via Storage Lens and IAM Analyzer will ensure ongoing compliance and cost efficiency.

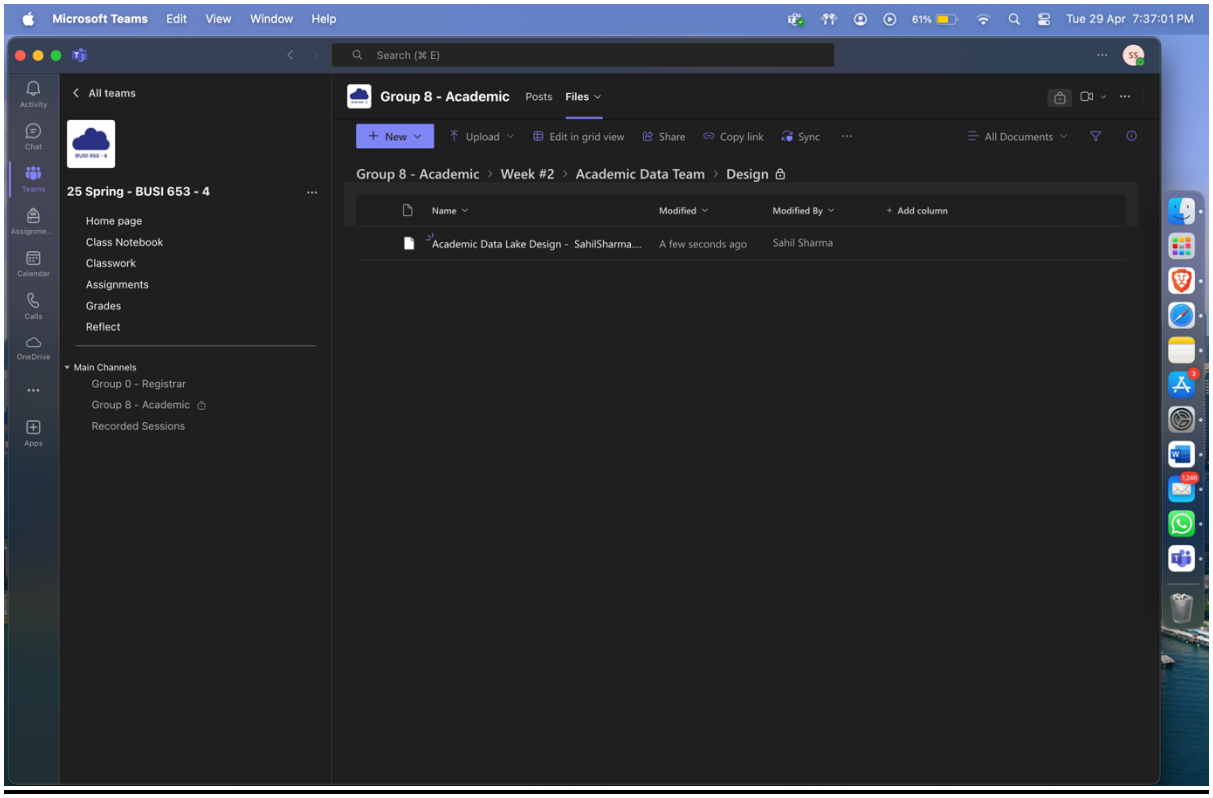
Attachments: Screenshots of EC2, S3, VPC, and Security Group configurations.

Respectfully submitted,

[Your Name]

Cloud Infrastructure Team

Screenshots: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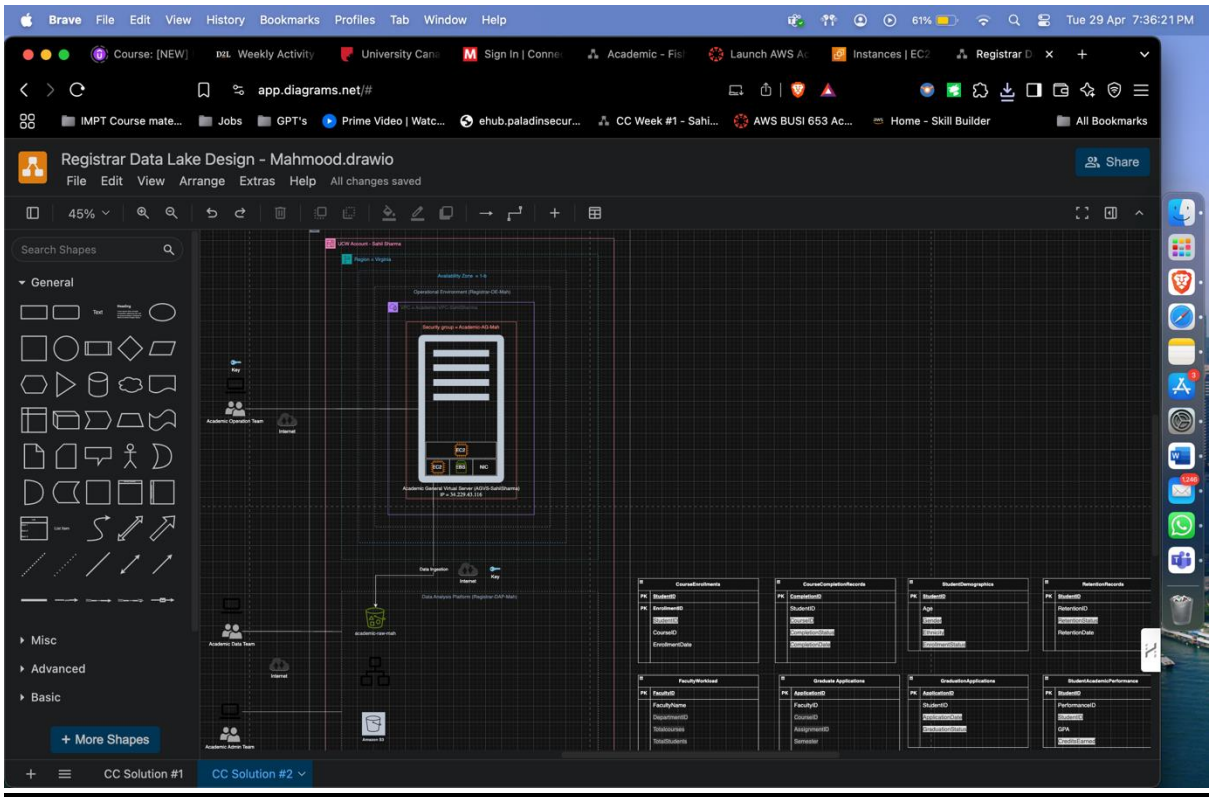
Home page
Class Notebook
Classwork
Assignments
Grades
Reflect
Main Channels
Group 0 - Registrar
Group 8 - Academic
Recorded Sessions
Group 8 - Academic
Posts
Files
New
Upload
Edit in grid view
Share
Copy link
Sync
All Documents
Group 8 - Academic › Week #2 › Academic Data Team › Design
Name
Modified
Modified By
Add column
Academic Data Lake Design - SahilSharma....
A few seconds ago
Sahil Sharma


Brave File Edit View History Bookmarks Profiles Tab Window Help
Tue 29 Apr 7:36:21 PM
app.diagrams.net/#
Registrar Data Lake Design - Mahmood.drawio
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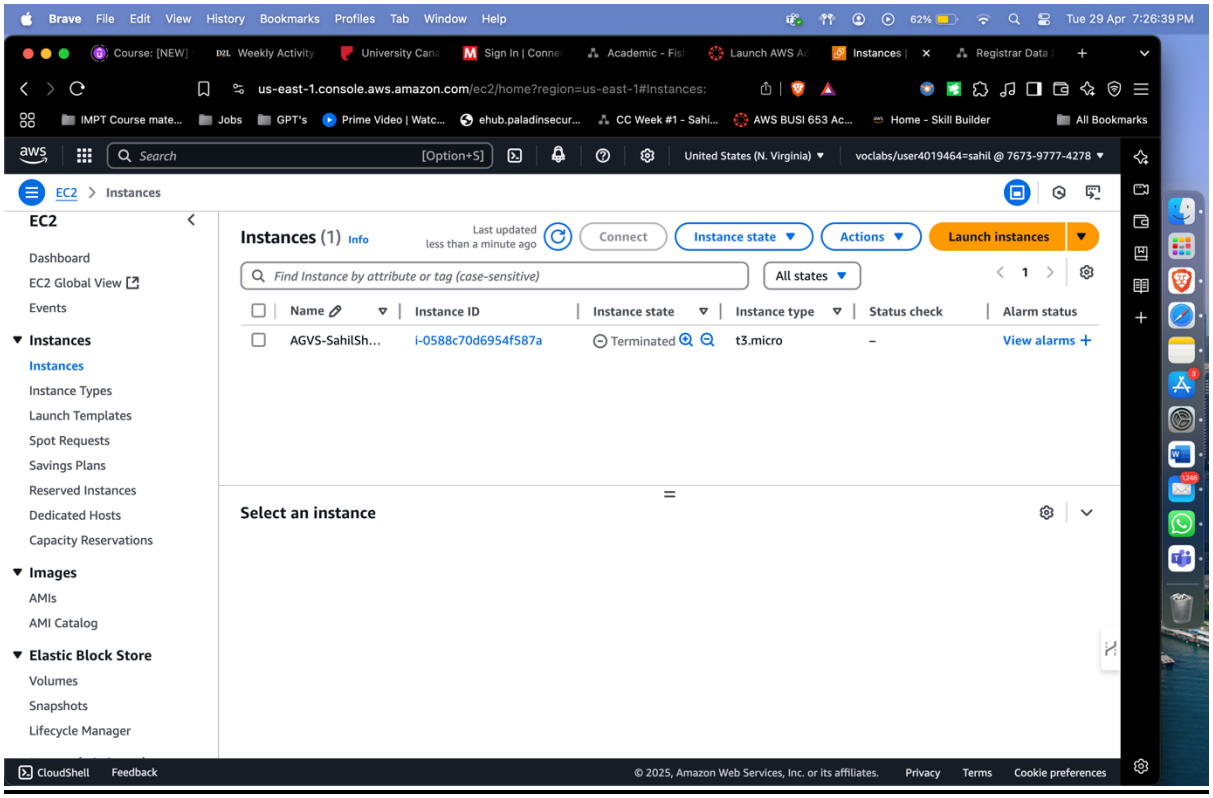
Share
Search Shapes
General
Misc
Advanced
Basic
+ More Shapes
CC Solution #1
CC Solution #2


us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:
EC2 > Instances
EC2
Dashboard
EC2 Global View
Events
Instances
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
Instances (1) Info
Last updated less than a minute ago
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
AGVS-SahilSh...
i-0588c70d6954f587a
Terminated
t3.micro
–
View alarms
Select an instance
CloudShell
Feedback
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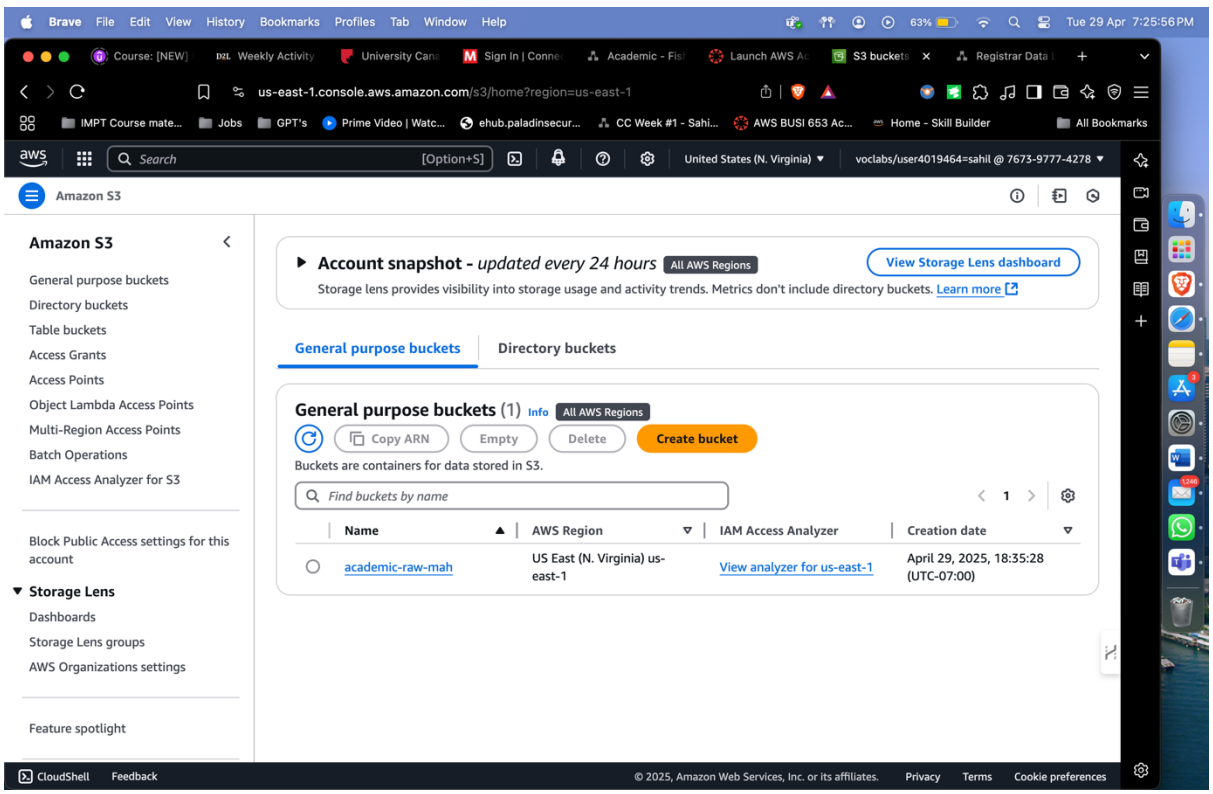
us-east-1.console.aws.amazon.com/s3/home?region=us-east-1
Amazon S3
Amazon S3
General purpose buckets
Directory buckets
Table buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Feature spotlight
Account snapshot - updated every 24 hours
All AWS Regions
View Storage Lens dashboard
Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. Learn more
General purpose buckets
Directory buckets
General purpose buckets (1) Info
All AWS Regions
Copy ARN
Empty
Delete
Create bucket
Buckets are containers for data stored in S3.
Find buckets by name
Name
AWS Region
IAM Access Analyzer
Creation date
academic-raw-mah
US East (N. Virginia) us-east-1
View analyzer for us-east-1
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CloudShell
Feedback
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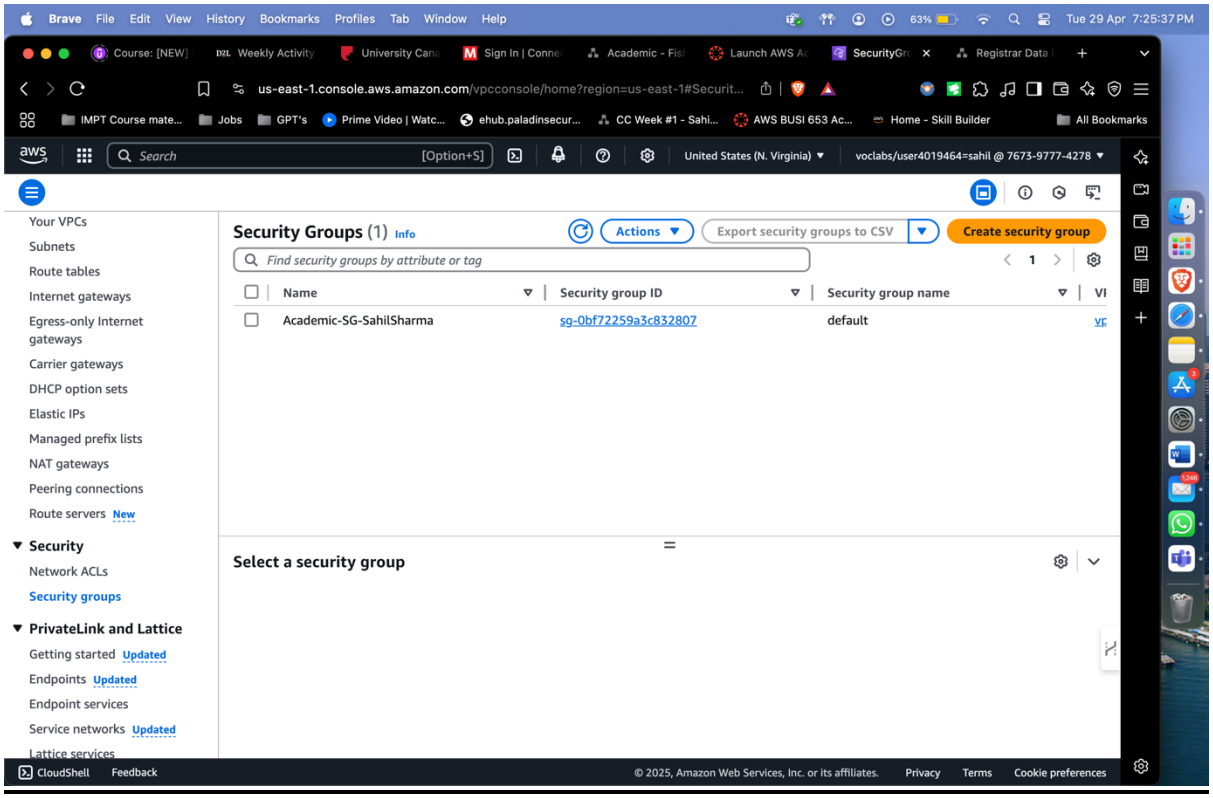
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us-east-1.console.aws.amazon.com/vpcconsole/home?region=us-east-1#Securit...
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United States (N. Virginia)
voclabs/user4019464=sahil @ 7673-9777-4278
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only Internet gateways
Carrier gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers New
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started Updated
Endpoints Updated
Endpoint services
Service networks Updated
Lattice services
Security Groups (1) Info
Actions
Export security groups to CSV
Create security group
Find security groups by attribute or tag
Name
Security group ID
Security group name
Academic-SG-SahilSharma
sg-0bf72259a3c832807
default
Select a security group
CloudShell
Feedback
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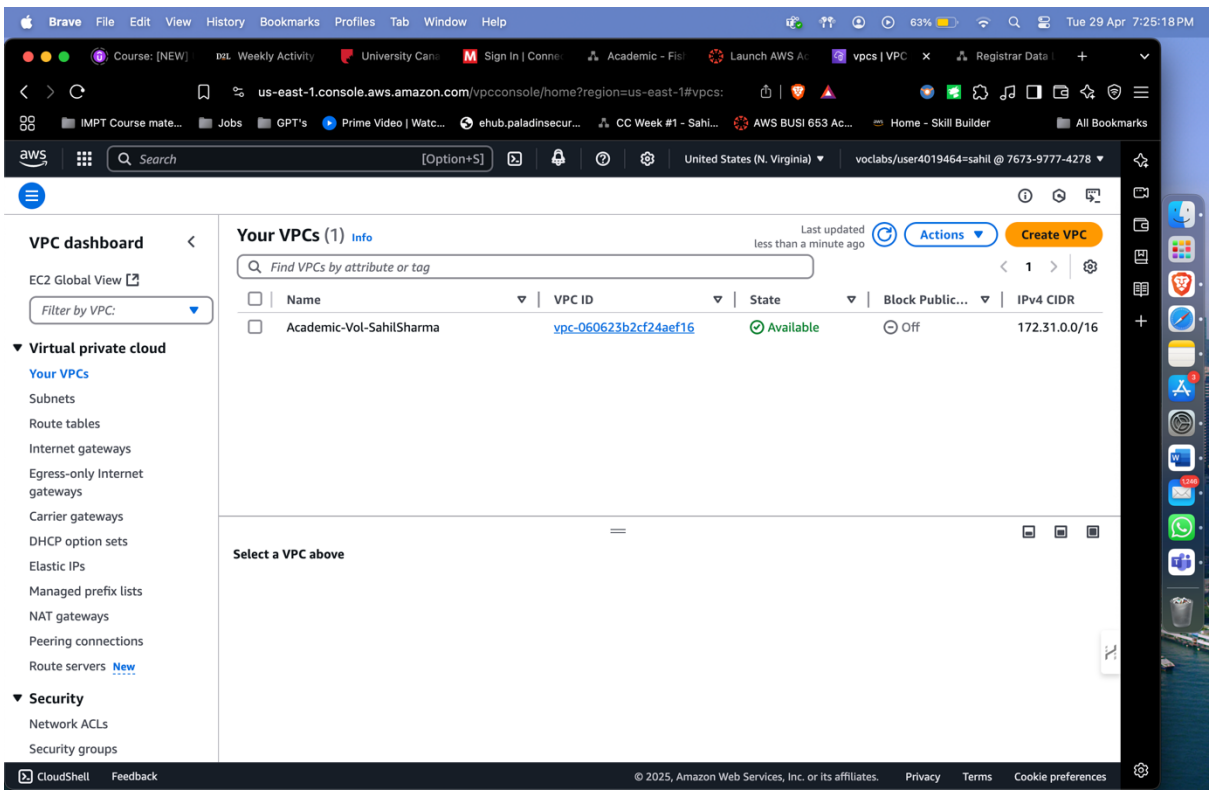
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United States (N. Virginia)
voclabs/user4019464=sahil @ 7673-9777-4278
VPC dashboard
EC2 Global View
Filter by VPC:
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only Internet gateways
Carrier gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers New
Security
Network ACLs
Security groups
Your VPCs (1) Info
Last updated less than a minute ago
Actions
Create VPC
Find VPCs by attribute or tag
Name
VPC ID
State
Block Public...
IPv4 CIDR
Academic-Vol-SahilSharma
vpc-060623b2cf24aef16
Available
Off
172.31.0.0/16
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CloudShell
Feedback
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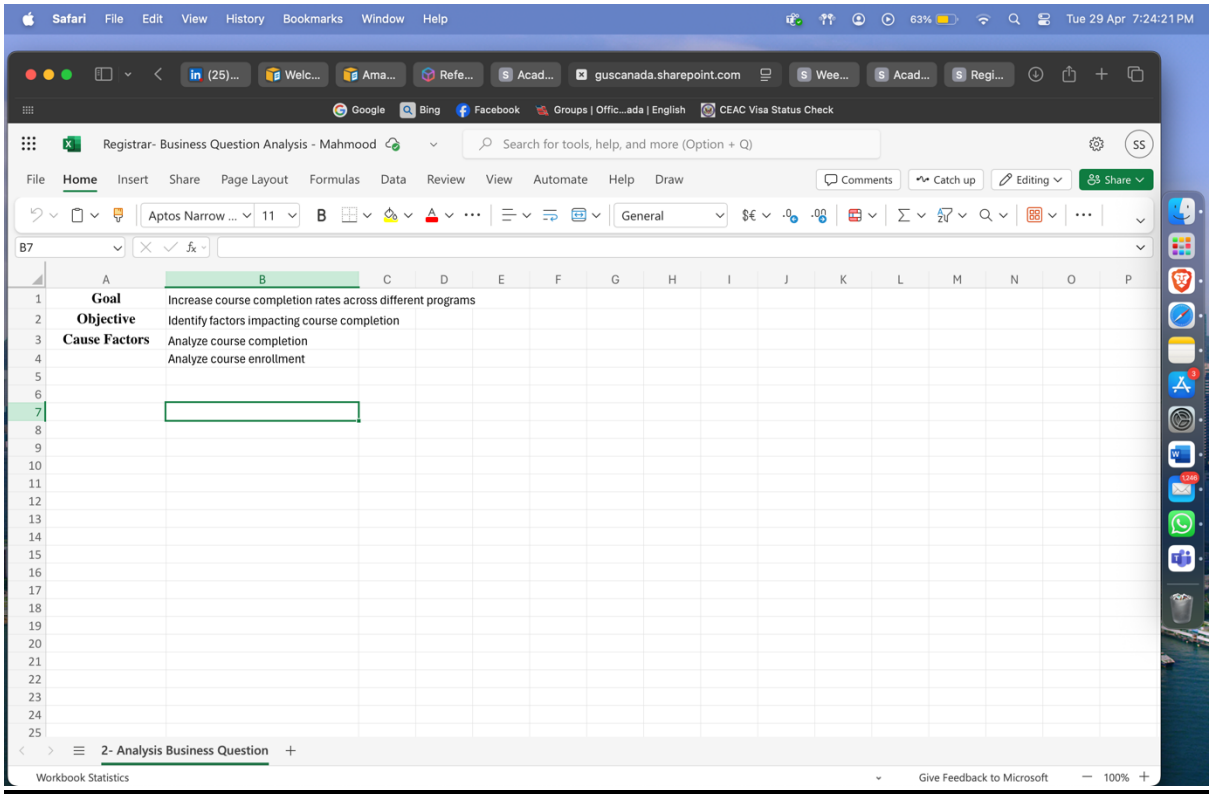
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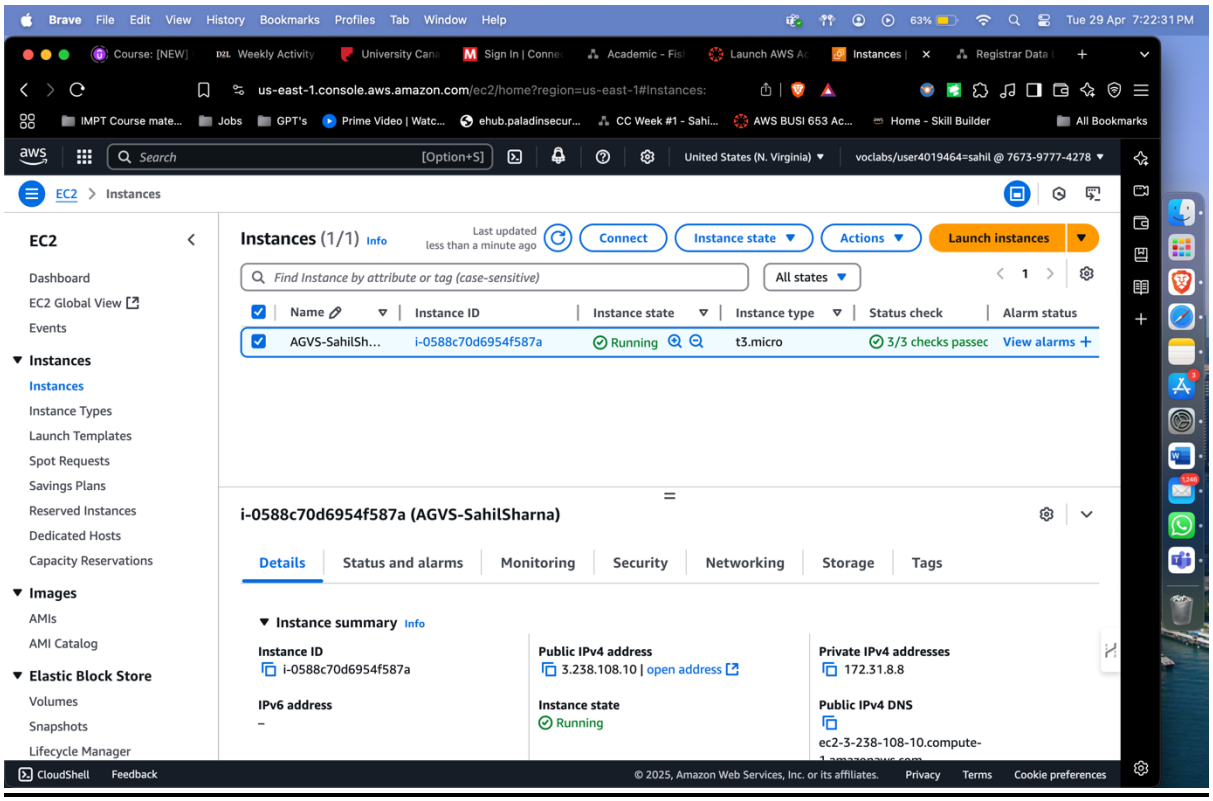
Registrar- Business Question Analysis - Mahmood
Search for tools, help, and more (Option + Q)
File Home Insert Share Page Layout Formulas Data Review View Automate Help Draw
Comments Catch up Editing Share
Goal
Increase course completion rates across different programs
Objective
Identify factors impacting course completion
Cause Factors
Analyze course completion
Analyze course enrollment
2- Analysis Business Question
Workbook Statistics
Give Feedback to Microsoft
100%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EC2 > Instances
Instances (1/1) Info
Last updated less than a minute ago
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
AGVS-SahilSh...
i-0588c70d6954f587a
Running
t3.micro
3/3 checks passed
View alarms
i-0588c70d6954f587a (AGVS-SahilSharna)
Details
Status and alarms
Monitoring
Security
Networking
Storage
Tags
Instance summary Info
Instance ID
i-0588c70d6954f587a
Public IPv4 address
3.238.108.10 | open address
Private IPv4 addresses
172.31.8.8
IPv6 address
Instance state
Running
Public IPv4 DNS
ec2-3-238-108-10.compute-
CloudShell
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Weekly Activity #2

Assignment

Due April 29 at 11:59 PM

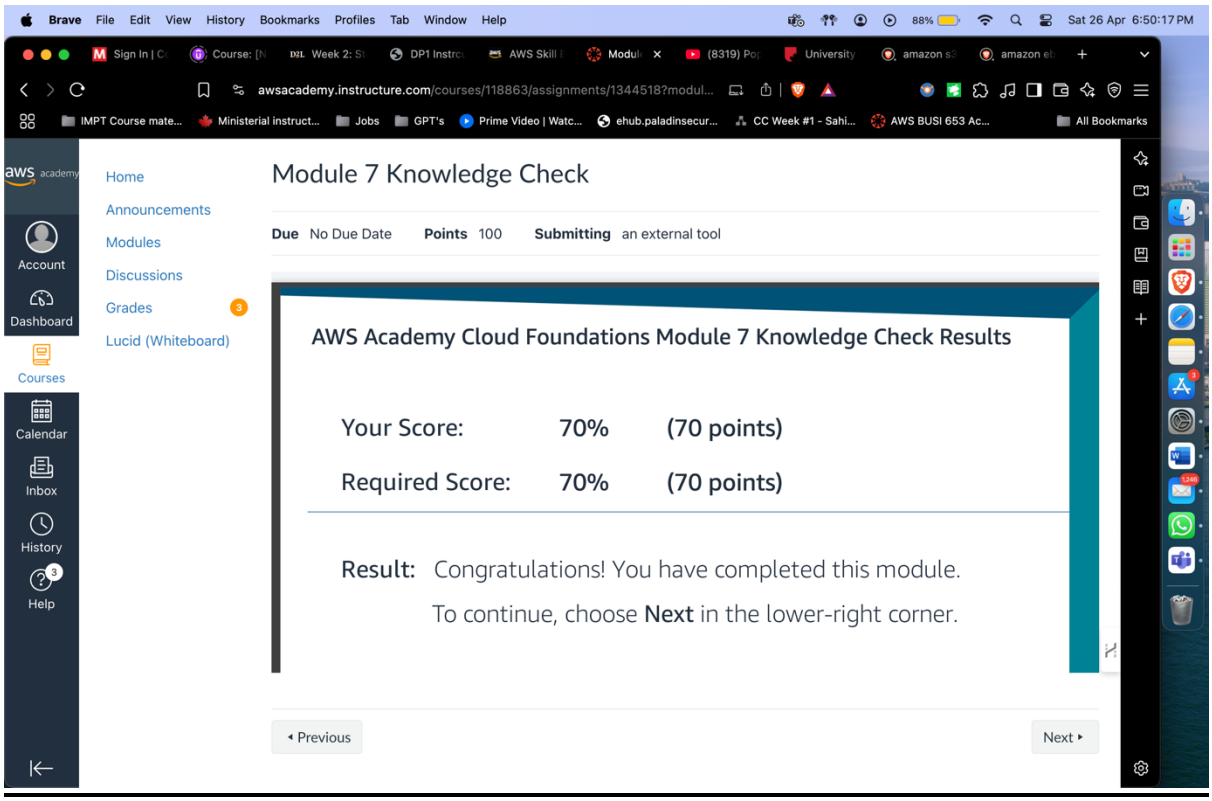
Instructions

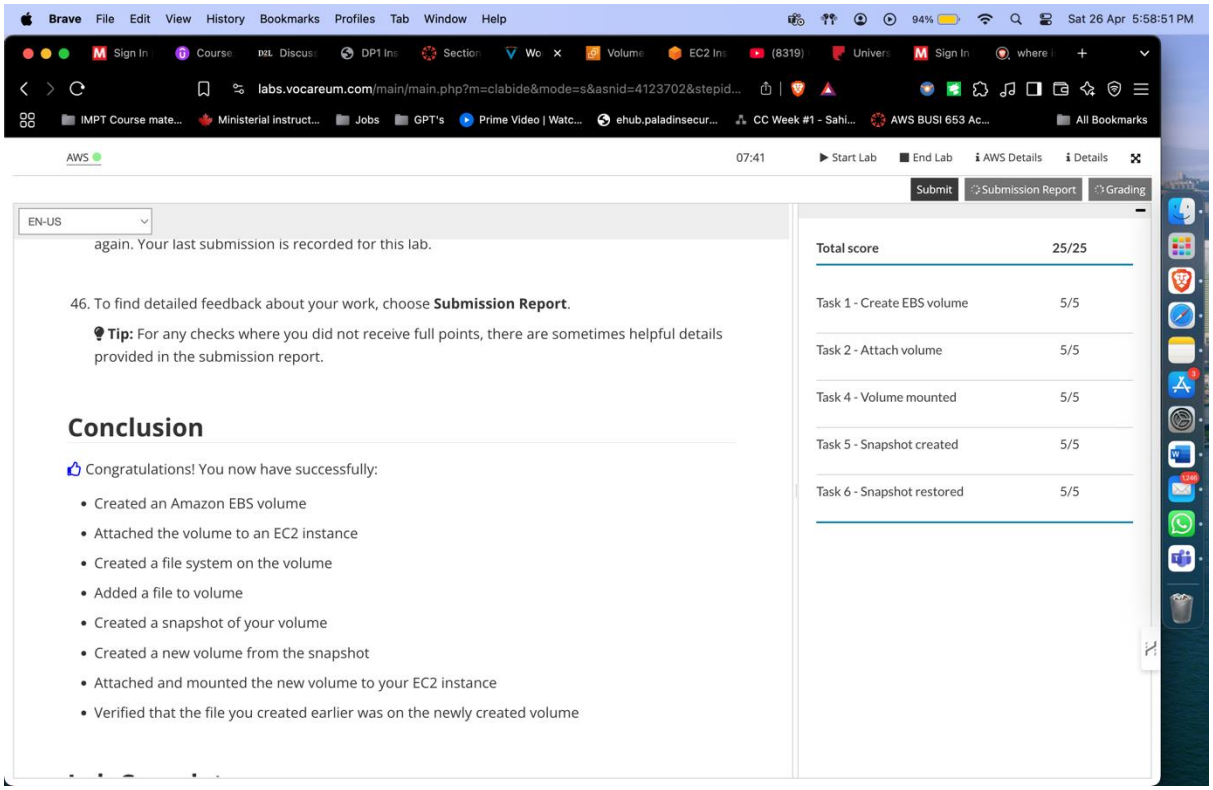
Background:

AWS provides cloud services to process and store data. This assignment requires you to practice with AWS EC2 and AWS S3 to create a virtual server and store datasets in AWS S3.

Directions:

1. Please watch the following video and implement the steps.
2. Write a one-page progress report to your manager based on the screenshots mentioned in the video and submit the report.

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AWS
07:41
Start Lab
End Lab
AWS Details
Details
Submit
Submission Report
Grading
EN-US
again. Your last submission is recorded for this lab.
46. To find detailed feedback about your work, choose Submission Report.
Tip: For any checks where you did not receive full points, there are sometimes helpful details provided in the submission report.
Conclusion
Congratulations! You now have successfully:
Created an Amazon EBS volume
Attached the volume to an EC2 instance
Created a file system on the volume
Added a file to volume
Created a snapshot of your volume
Created a new volume from the snapshot
Attached and mounted the new volume to your EC2 instance
Verified that the file you created earlier was on the newly created volume
Total score 25/25
Task 1 - Create EBS volume 5/5
Task 2 - Attach volume 5/5
Task 4 - Volume mounted 5/5
Task 5 - Snapshot created 5/5
Task 6 - Snapshot restored 5/5