DEPARMENT RESOURCE BOOKING SYSTEM

AWS ARCHITECTURE DESIGN and IMPLEMENTATION

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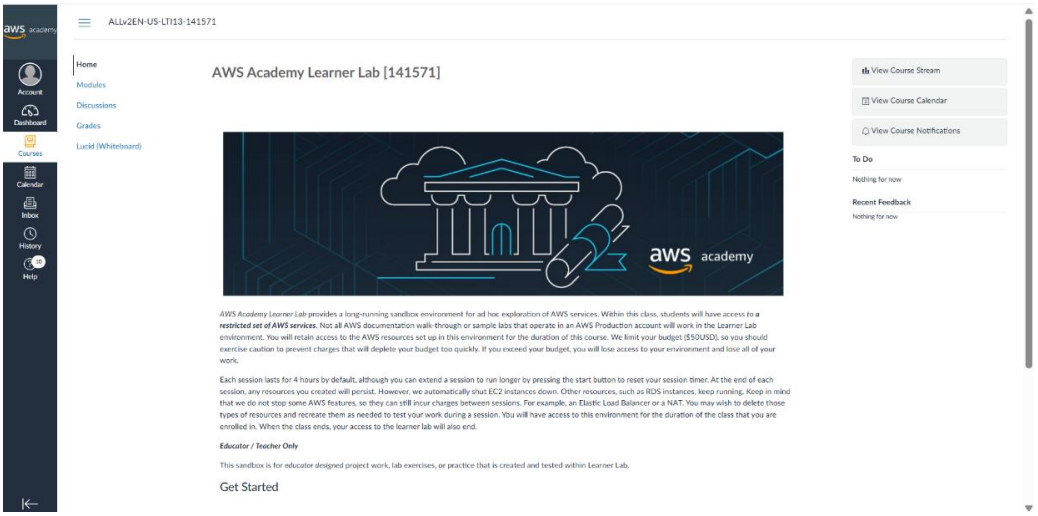
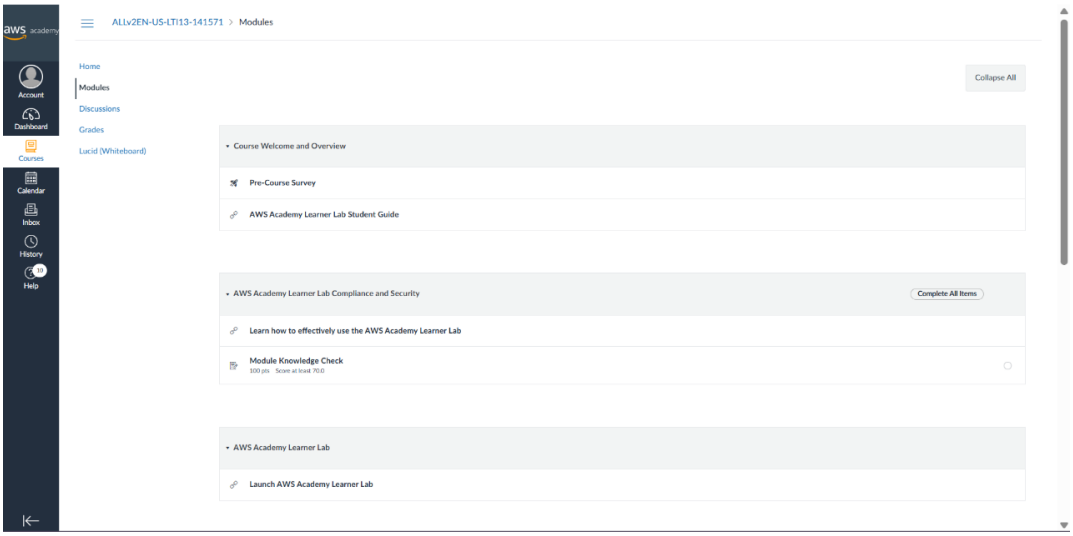
Submitted to: Dr. Zunnurain Hussain, Sir Umair Makhdoom

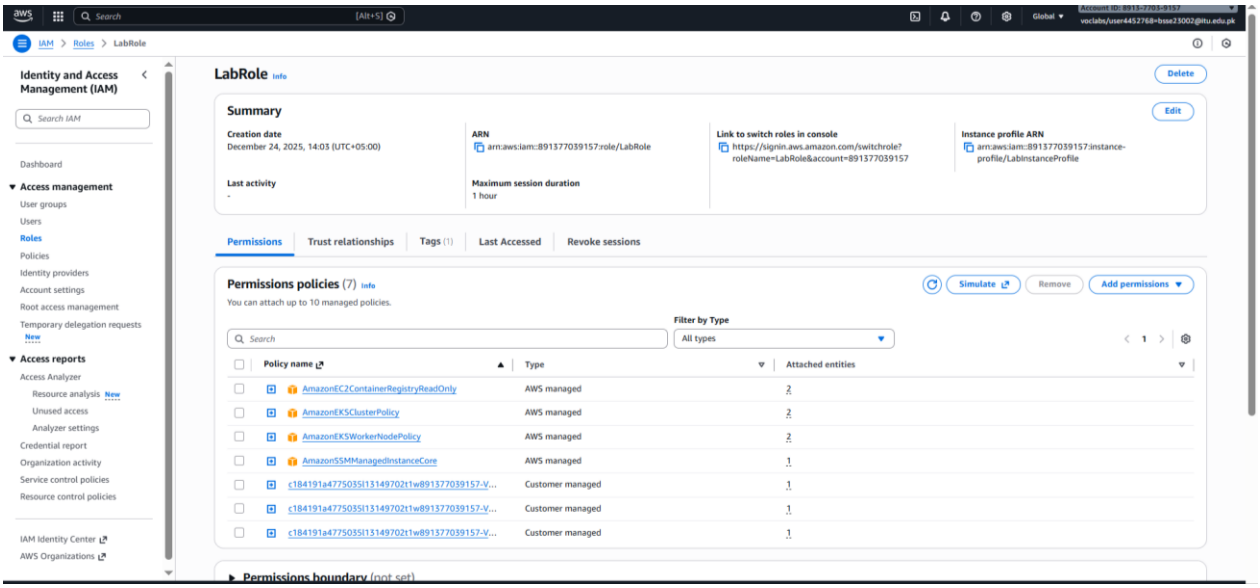
AWS account setup:





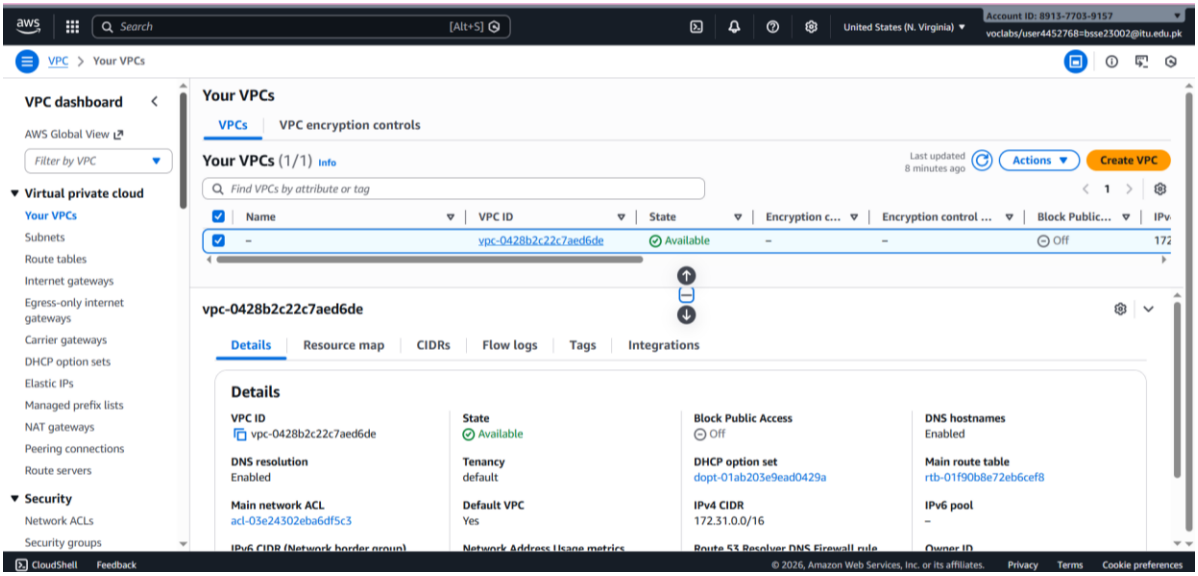
IAM roles & policies:

LabRole

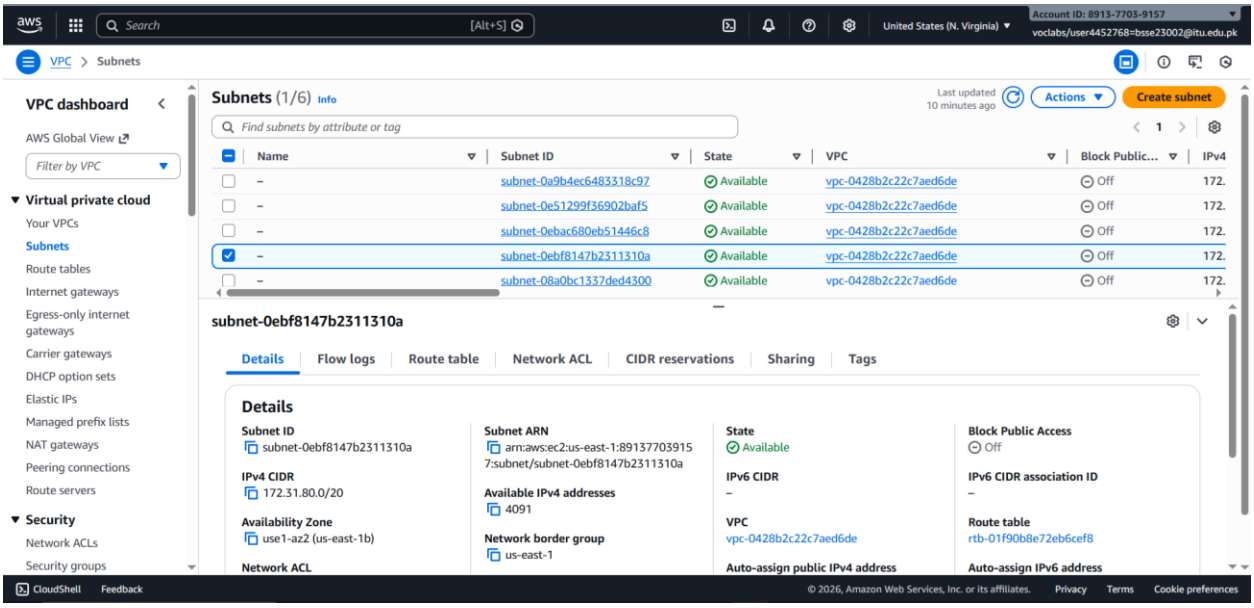


VPC/subnets/security groups

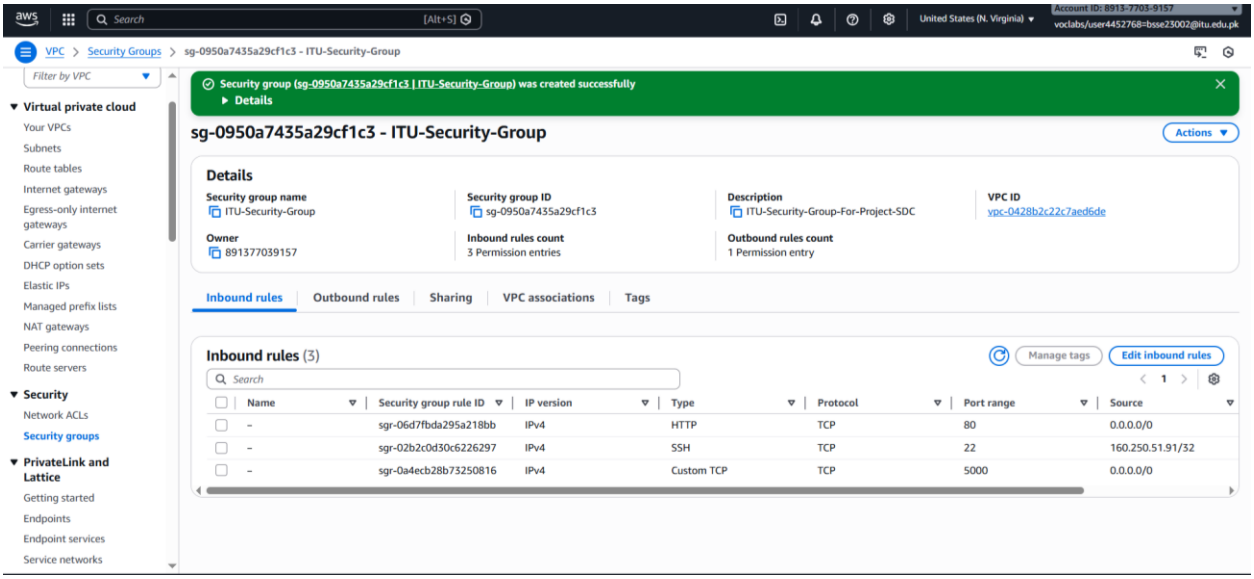
VPC (default)

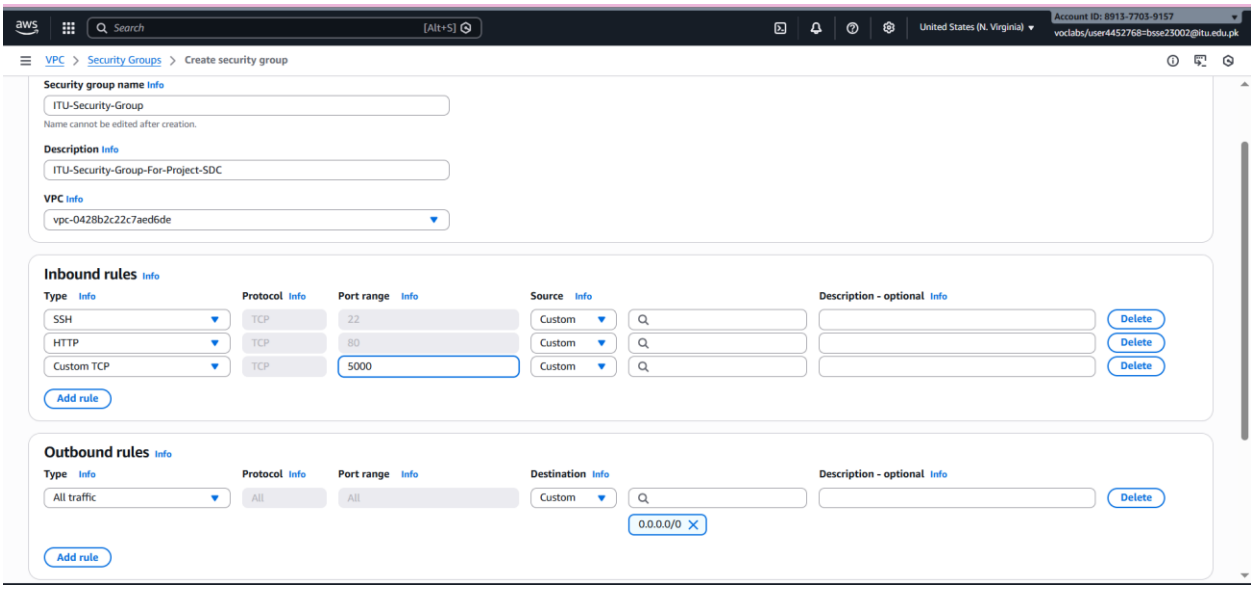


Subnet (default)



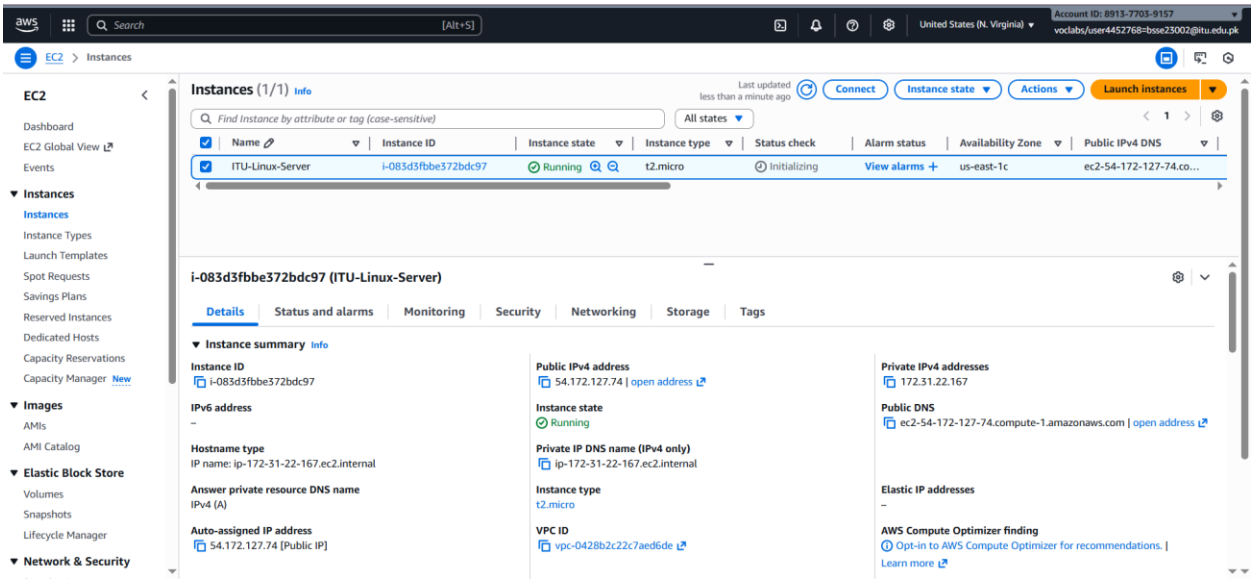
Security group



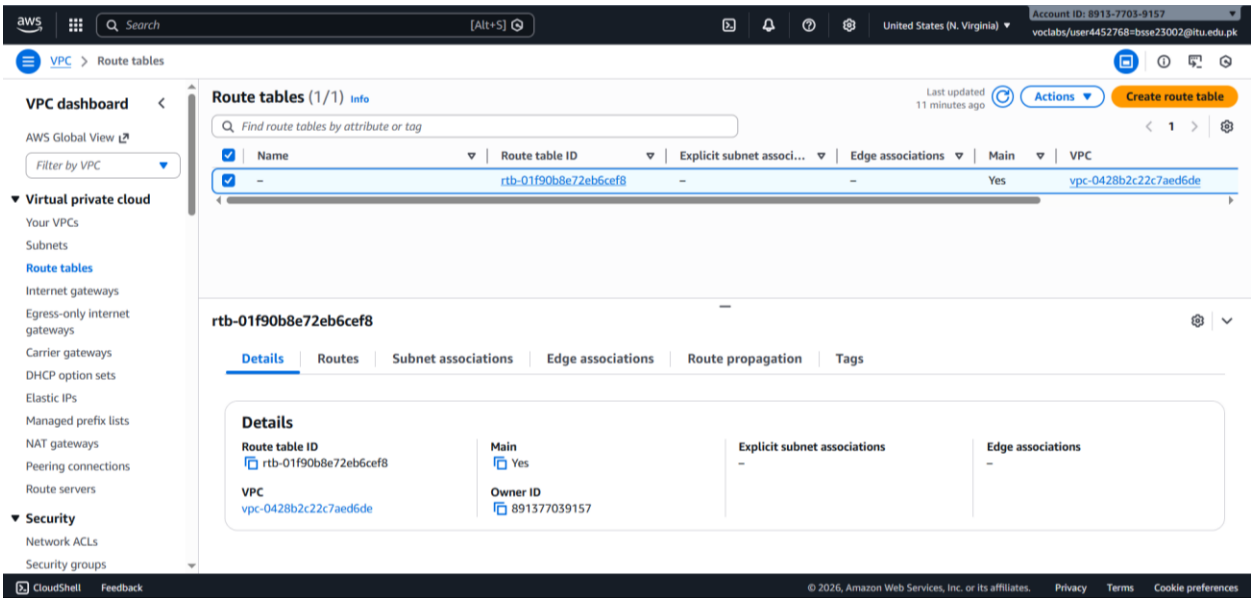


EC2, S3, Lambda, DynamoDB, RDS, API Gateway, or any used service

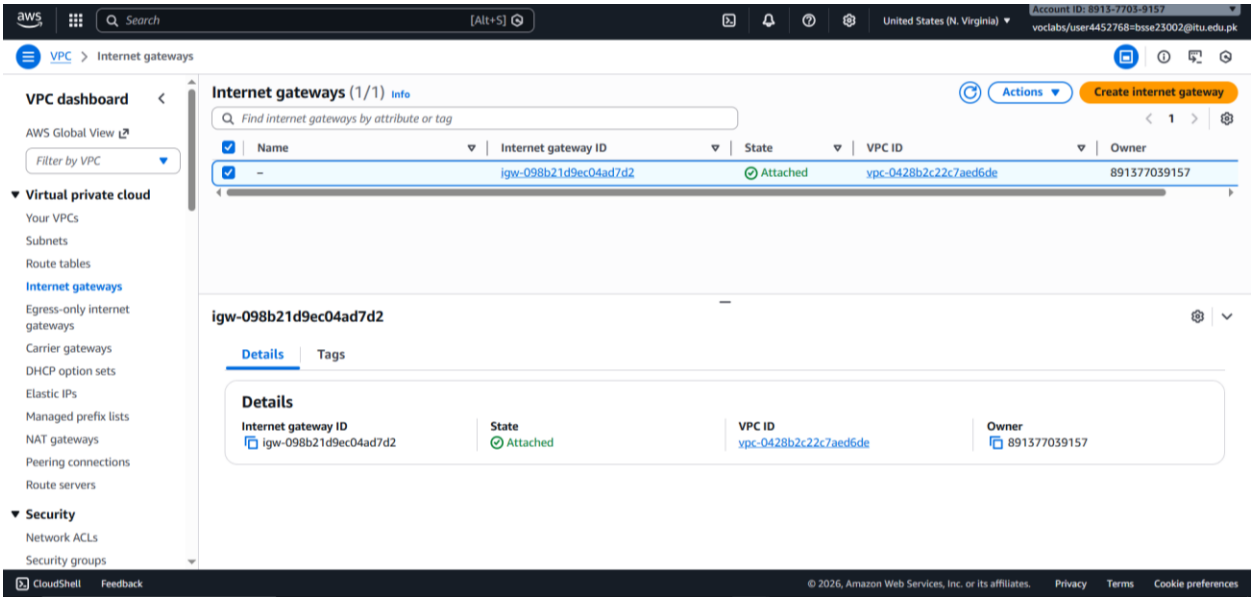
EC2 Instance



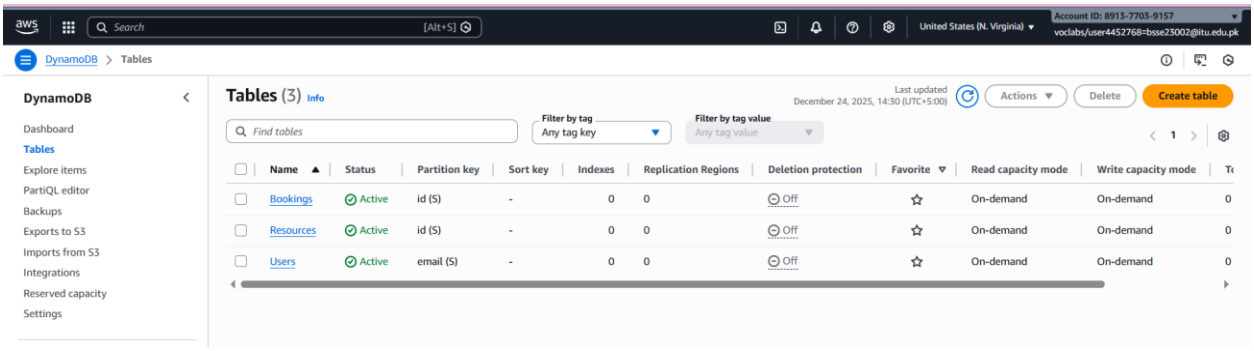
Route Table (default)



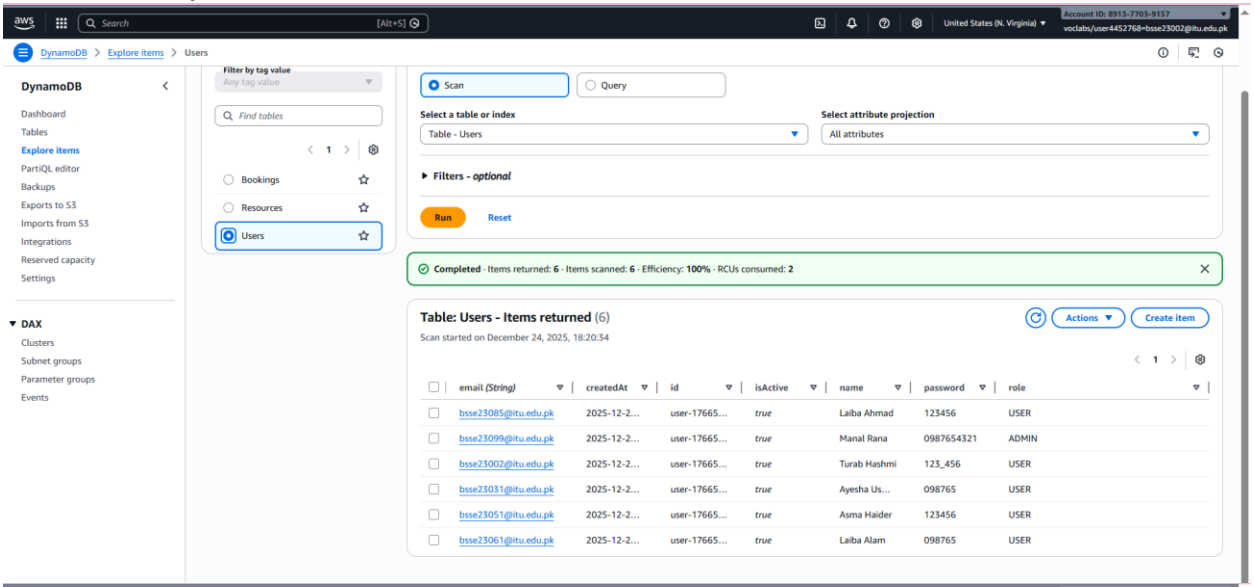
Internet gateway (default)

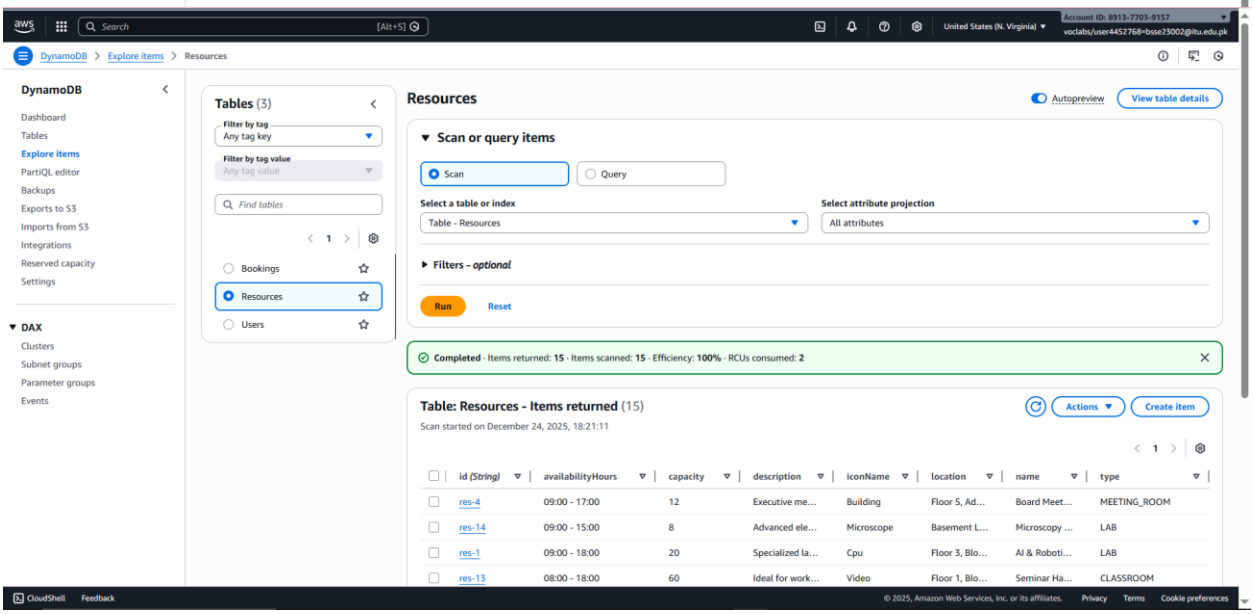


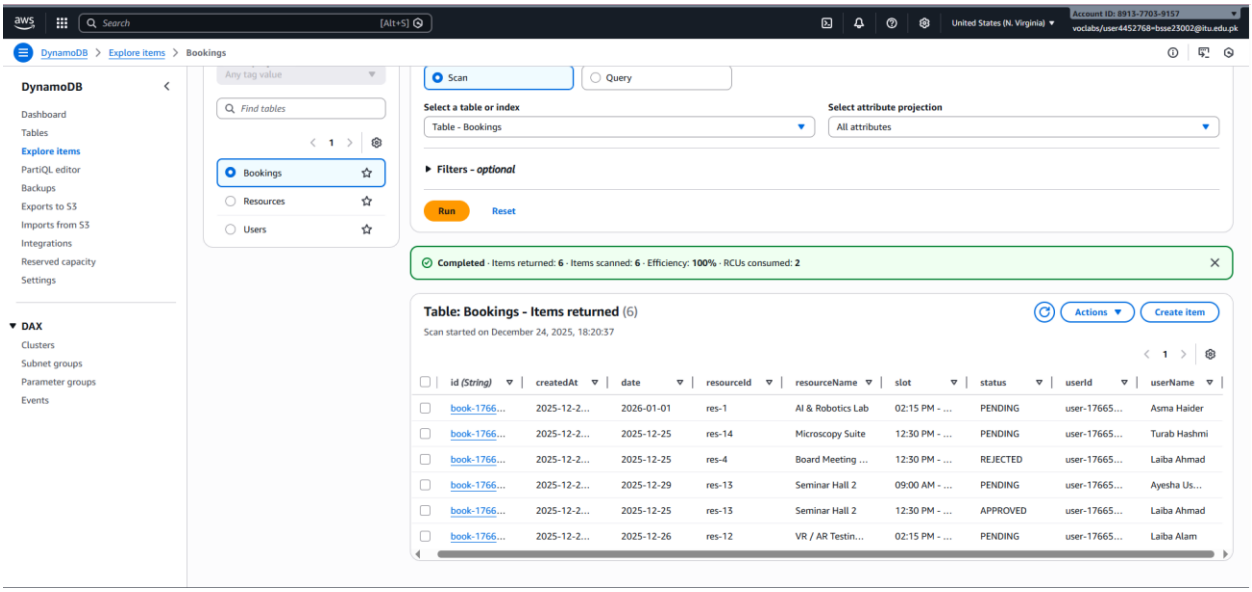
DynamoDB



Data on DynamoDB Tables:







Deployment process

Node.js and Git installation on server

```
ec2-user@ip-172-31-22-167:~
  Preparing        :                                                        1/1
  Installing       : nodejs-docs-1:18.20.8-1.amzn2023.0.2.noarch            1/14
  Installing       : libbrotli-1.0.9-4.amzn2023.0.2.x86_64                  2/14
  Installing       : git-core-2.50.1-1.amzn2023.0.1.x86_64                  3/14
  Installing       : git-core-doc-2.50.1-1.amzn2023.0.1.noarch              4/14
  Installing       : nodejs-libs-1:18.20.8-1.amzn2023.0.2.x86_64            5/14
  Installing       : nodejs-full-i18n-1:18.20.8-1.amzn2023.0.2.x86_64       6/14
  Installing       : nodejs-npm-1:10.8.2-1.18.20.8.1.amzn2023.0.2.x86_64    7/14
  Installing       : nodejs-1:18.20.8-1.amzn2023.0.2.x86_64                 8/14
  Running scriptlet: nodejs-1:18.20.8-1.amzn2023.0.2.x86_64                 8/14
INFO: registered node-18 in the alternatives

  Installing       : perl-lib-0.65-477.amzn2023.0.7.x86_64                  9/14
  Installing       : perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64           10/14
  Installing       : perl-File-Find-1.37-477.amzn2023.0.7.noarch           11/14
  Installing       : perl-Error-1:0.17029-5.amzn2023.0.2.noarch            12/14
  Installing       : perl-Git-2.50.1-1.amzn2023.0.1.noarch                 13/14
  Installing       : git-2.50.1-1.amzn2023.0.1.x86_64                      14/14
  Running scriptlet: git-2.50.1-1.amzn2023.0.1.x86_64                      14/14
  Verifying        : git-2.50.1-1.amzn2023.0.1.x86_64                       1/14
  Verifying        : git-core-2.50.1-1.amzn2023.0.1.x86_64                  2/14
  Verifying        : git-core-doc-2.50.1-1.amzn2023.0.1.noarch              3/14
  Verifying        : libbrotli-1.0.9-4.amzn2023.0.2.x86_64                  4/14
  Verifying        : nodejs-1:18.20.8-1.amzn2023.0.2.x86_64                 5/14
  Verifying        : nodejs-docs-1:18.20.8-1.amzn2023.0.2.noarch            6/14
  Verifying        : nodejs-full-i18n-1:18.20.8-1.amzn2023.0.2.x86_64       7/14
  Verifying        : nodejs-libs-1:18.20.8-1.amzn2023.0.2.x86_64            8/14
  Verifying        : nodejs-npm-1:10.8.2-1.18.20.8.1.amzn2023.0.2.x86_64    9/14
  Verifying        : perl-Error-1:0.17029-5.amzn2023.0.2.noarch            10/14
  Verifying        : perl-File-Find-1.37-477.amzn2023.0.7.noarch           11/14
  Verifying        : perl-Git-2.50.1-1.amzn2023.0.1.noarch                 12/14
  Verifying        : perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64           13/14
  Verifying        : perl-lib-0.65-477.amzn2023.0.7.x86_64                 14/14

Installed:
  git-2.50.1-1.amzn2023.0.1.x86_64                git-core-2.50.1-1.amzn2023.0.1.x86_64
  git-core-doc-2.50.1-1.amzn2023.0.1.noarch       libbrotli-1.0.9-4.amzn2023.0.2.x86_64
  nodejs-1:18.20.8-1.amzn2023.0.2.x86_64          nodejs-docs-1:18.20.8-1.amzn2023.0.2.noarch
  nodejs-full-i18n-1:18.20.8-1.amzn2023.0.2.x86_64 nodejs-libs-1:18.20.8-1.amzn2023.0.2.x86_64
  nodejs-npm-1:10.8.2-1.18.20.8.1.amzn2023.0.2.x86_64 perl-Error-1:0.17029-5.amzn2023.0.2.noarch
  perl-File-Find-1.37-477.amzn2023.0.7.noarch     perl-Git-2.50.1-1.amzn2023.0.1.noarch
  perl-TermReadKey-2.38-9.amzn2023.0.2.x86_64     perl-lib-0.65-477.amzn2023.0.7.x86_64

Complete!
[ec2-user@ip-172-31-22-167 ~]$ node -v
v18.20.8
[ec2-user@ip-172-31-22-167 ~]$ npm -v
10.8.2
[ec2-user@ip-172-31-22-167 ~]$
```

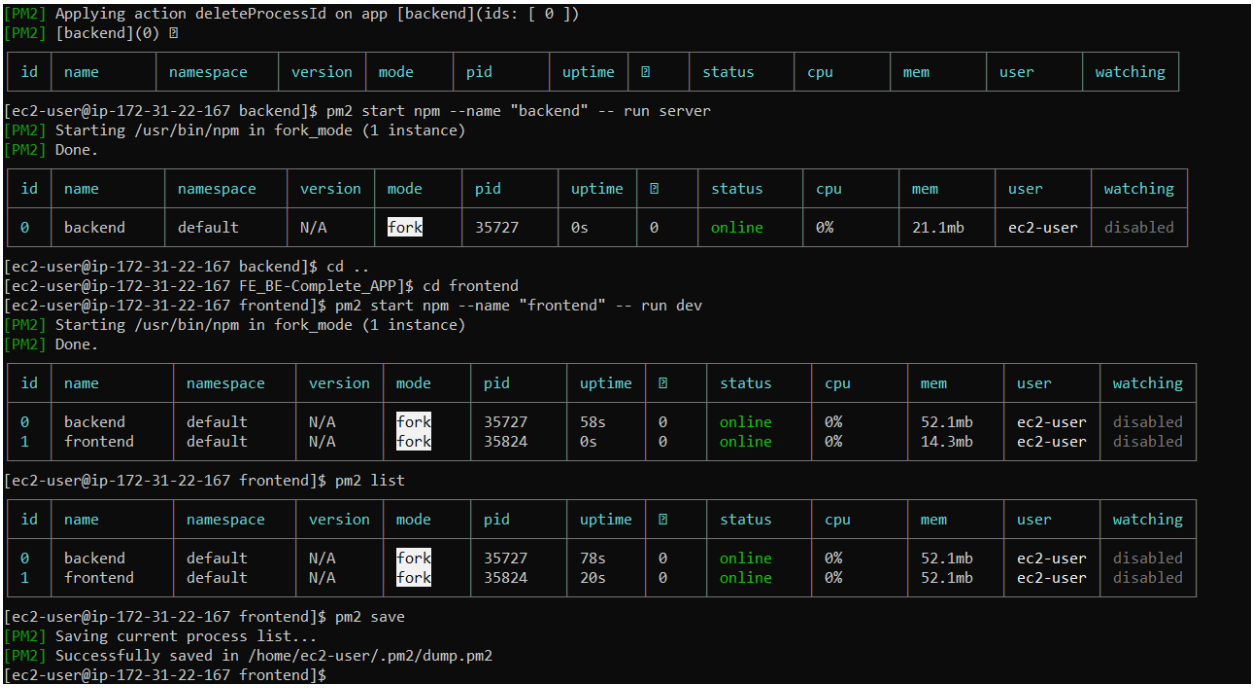
Backend running

```
[ec2-user@ip-172-31-22-167 FE_BE-Complete_APP]$ npm run server

> itu-department-resource-booking-system@0.0.0 server
> tsx backend/server.ts

[SERVER] ITU Resource Booking API running on port 5000
[SERVER] Environment: development
```

Frontend running

```
 VITE v6.4.1  ready in 254 ms

  ➜  Local:   http://localhost:3000/
  ➜  Network: http://172.31.22.167:3000/
  ➜  press h + enter to show help
```

Making server live using pm2

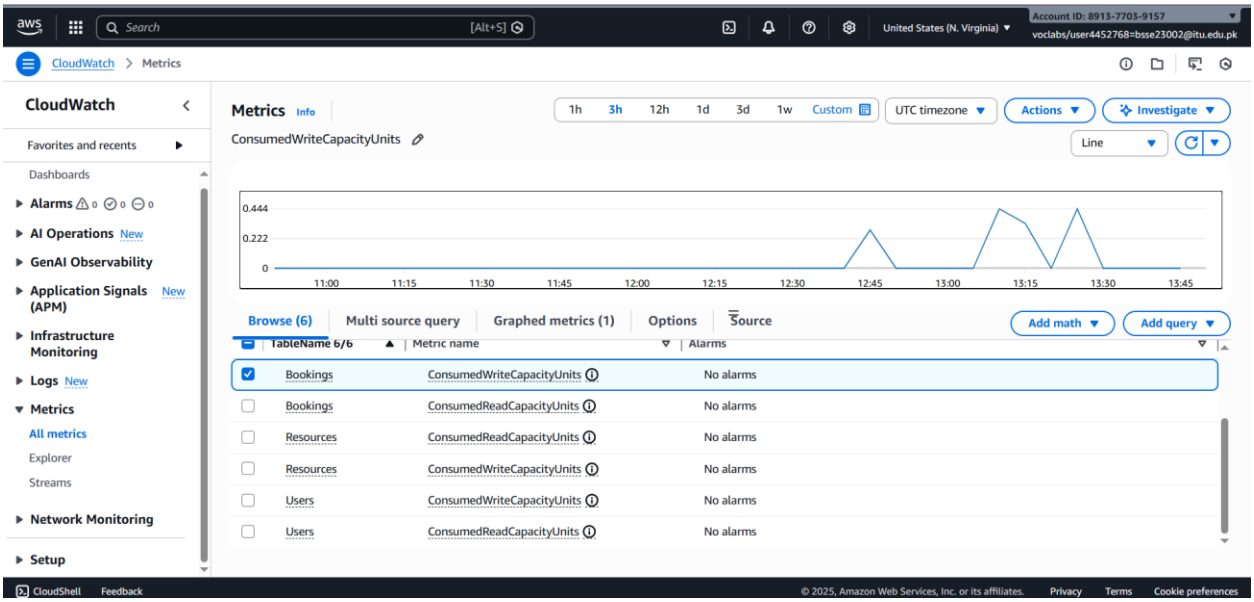


Testing workflow

```
PS C:\Users\ahmad\Documents\5th Semester\AWS_project_SDC> npm audit
# npm audit report

qs  <6.14.1
Severity: high
qs's arrayLimit bypass in its bracket notation allows DoS via memory exhaustion - https://github.com/advisories/GHSA-6rw
7-vpxm-498p
fix available via `npm audit fix`
node_modules/qs

1 high severity vulnerability

To address all issues, run:
  npm audit fix
PS C:\Users\ahmad\Documents\5th Semester\AWS_project_SDC> npm audit fix

changed 1 package, and audited 242 packages in 4s

38 packages are looking for funding
  run `npm fund` for details

found 0 vulnerabilities
```

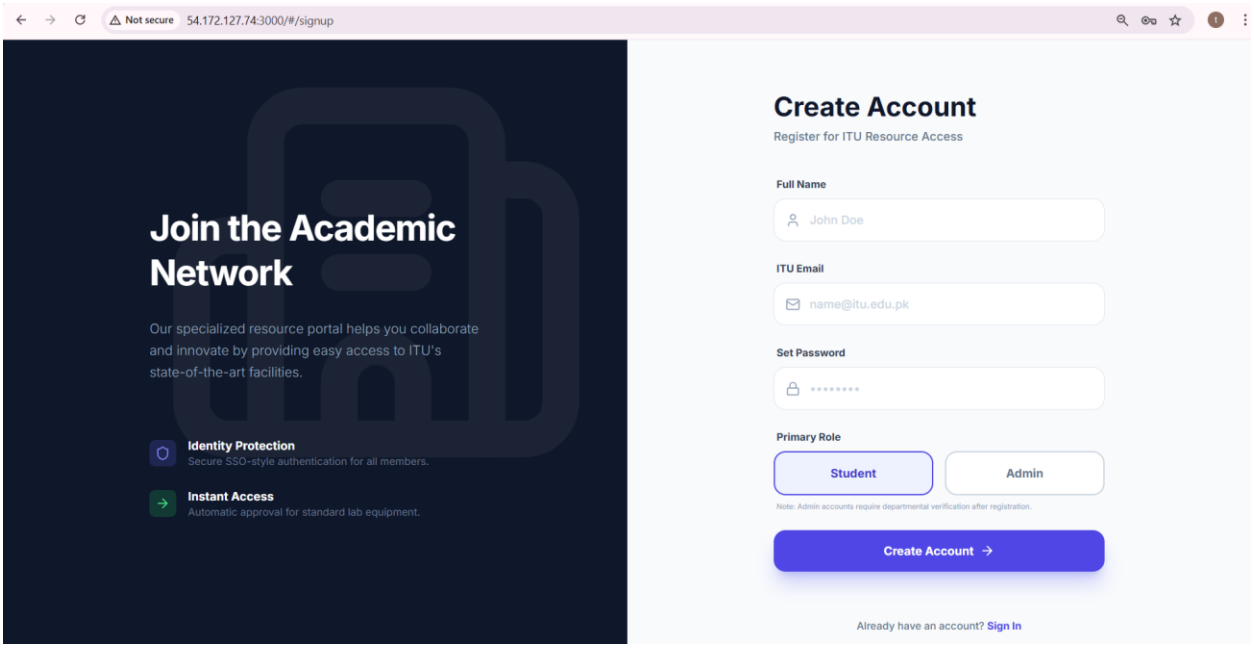
```
PS C:\Users\ahmad\Documents\5th Semester\AWS_project_SDC\backend> npm run server

> itu-department-resource-booking-system@0.0.0 server
> tsx backend/server.ts

[SERVER] ITU Resource Booking API running on port 5000
[SERVER] Environment: development
```

Monitoring / logging (CloudWatch)

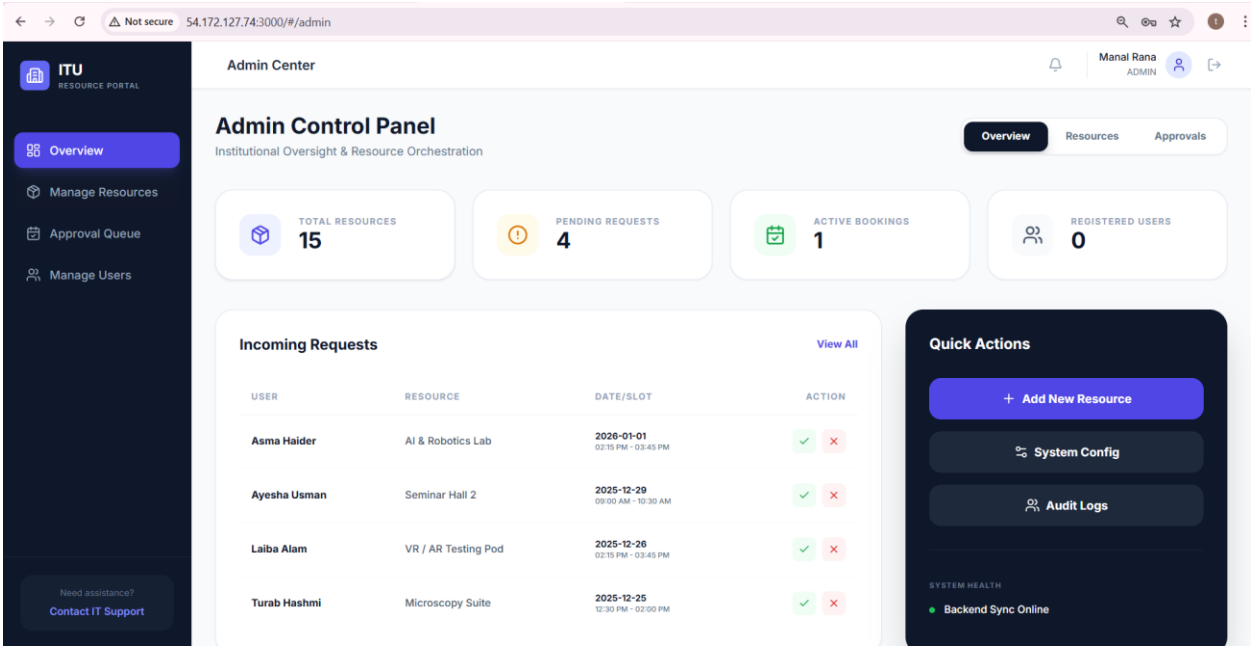


Final output

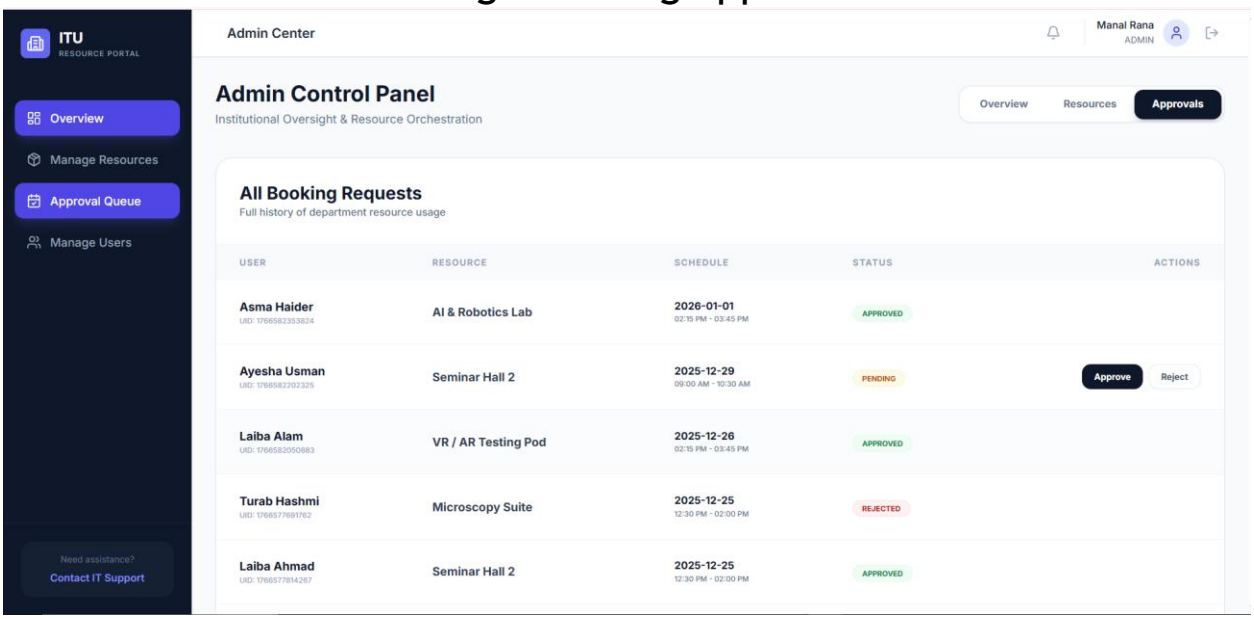
Landing page:



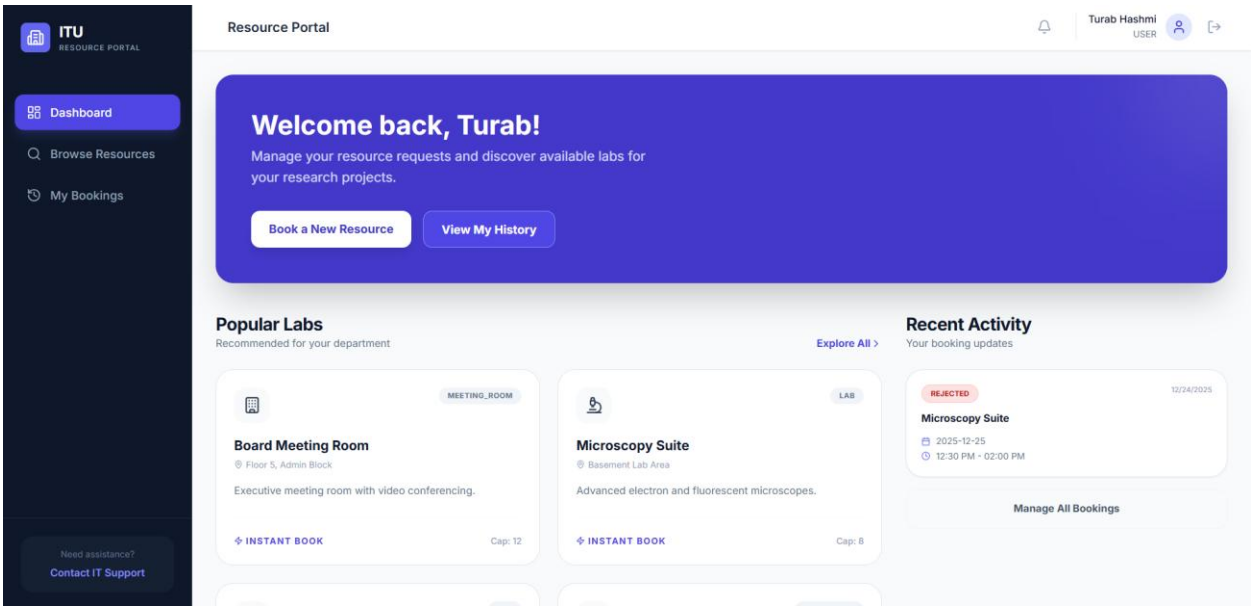
Admin dashboard



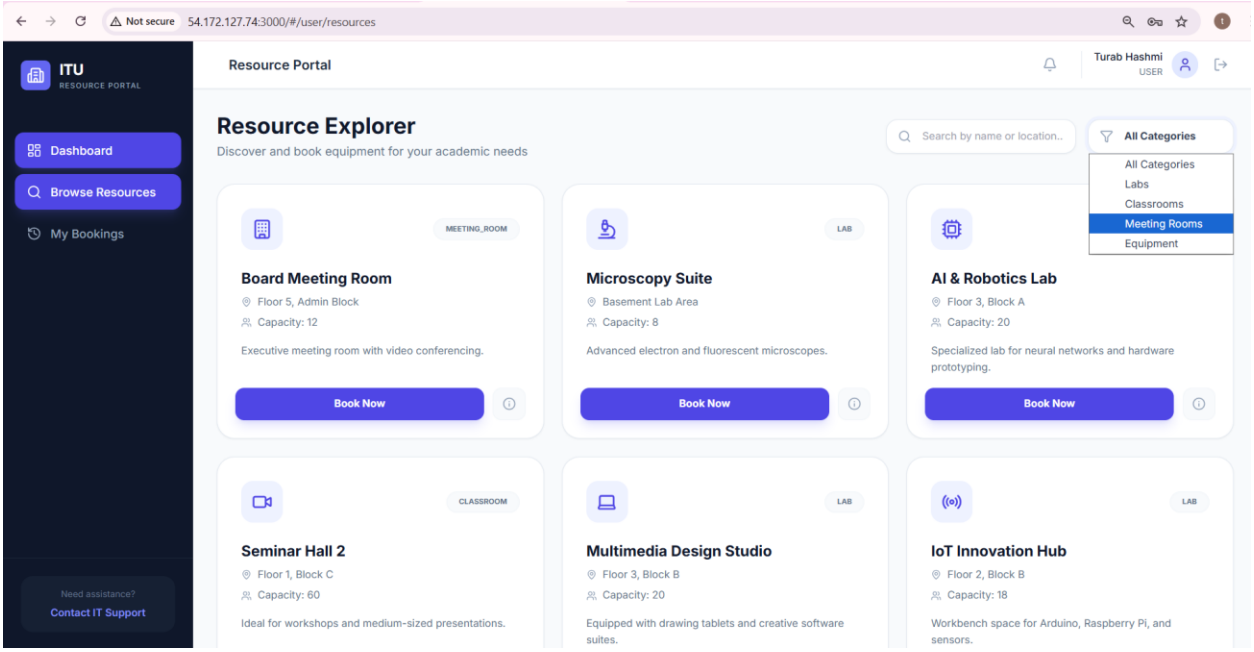
Manage booking approvals



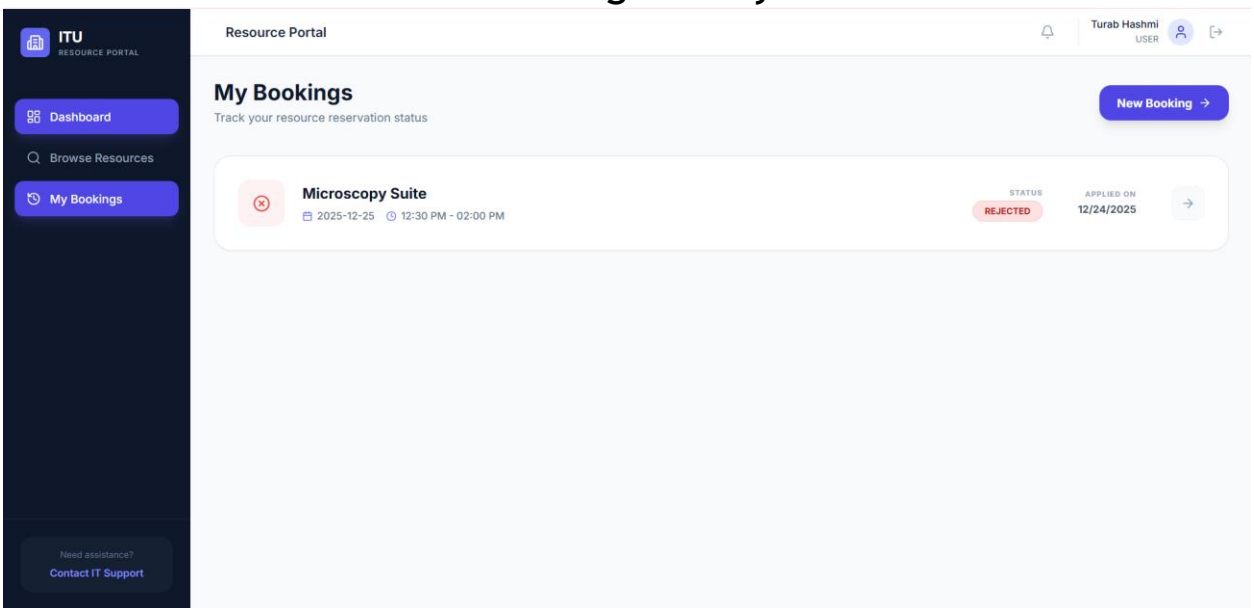
Student Dashboard



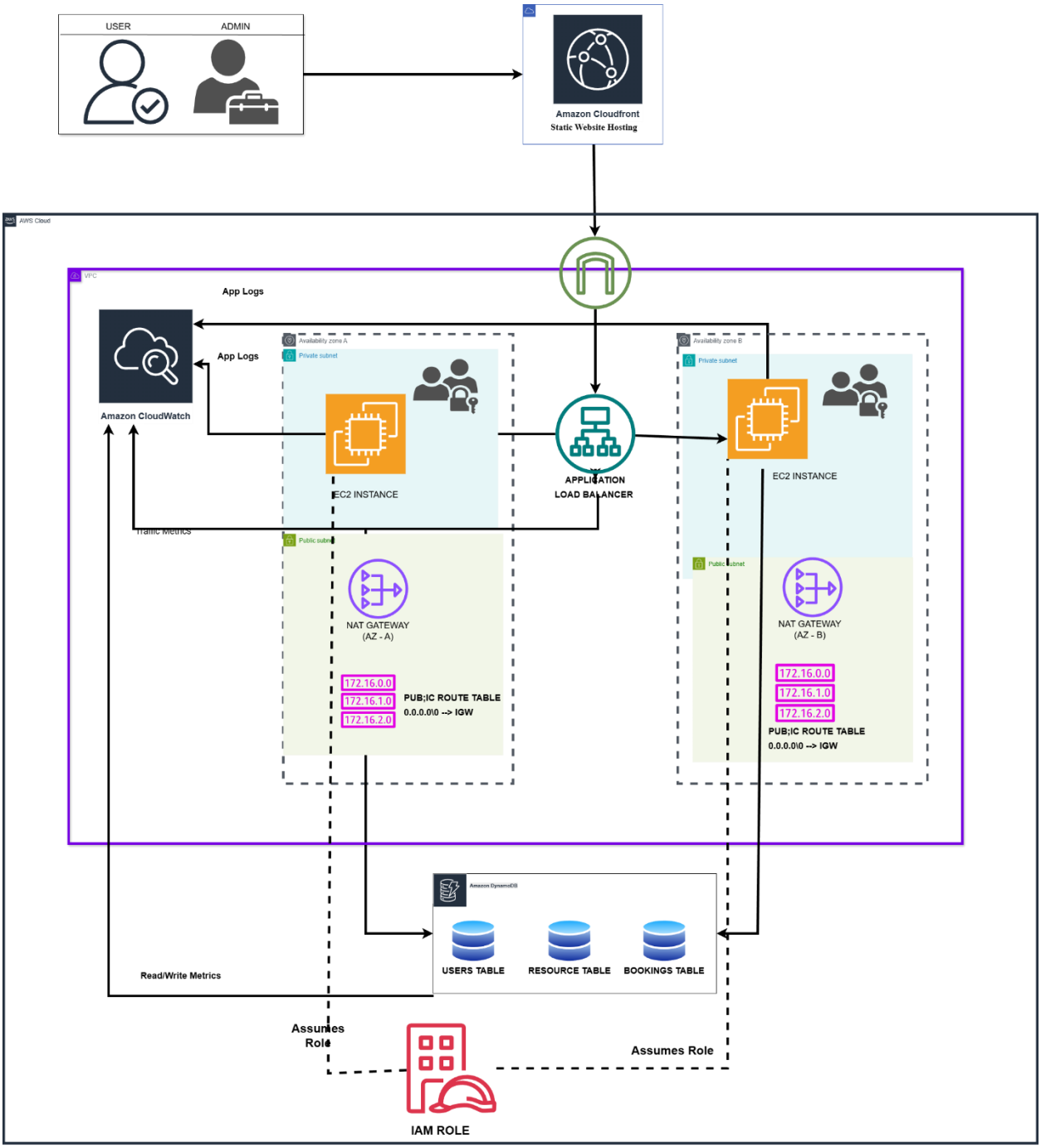
Explore resources and filter to select catagory



Booking History



AWS Architecture Diagram



GITHUB LINK:

[AWS_project_SDC]