AWS IAM Lab

What:
Identity and Access Management service to securely control access to AWS resources.

How:
Create users, groups, roles, and policies to grant permissions based on the principle of least privilege.

How Much:
Free to use; no additional costs for IAM.

🎯 Objective
- Create IAM users (instead of using the root account).
- Apply least privilege policies.
- Enable Multi-Factor Authentication (MFA).
- Test access to verify permissions.

📘 Step 1 — Log in as Root User (One Time)
1. Go to AWS Console (https://console.aws.amazon.com/).
2. Log in using your root account credentials (email & password).

⚠️ Important: Do not use the root user for daily tasks. This step is only to create your first admin.

👤 Step 2 — Create an IAM Admin User
1. In the AWS Console, search for IAM → Open it.
2. Click Users → Add users.
3. Enter a username: admin-user.
4. Select AWS Management Console access.
5. Create Password and Check 'Require password reset' for first login.
6. Permissions → Attach existing policies directly → Select: AdministratorAccess (only for this admin user).
7. Finish and download .csv file with login details.

💡 This ensures you use the admin IAM user going forward, not the root account.

🧑‍💻 Step 3 — Create a New IAM User (Limited Access)

1. IAM → Users → Add users.
2. Username: dev-user.
3. Console access: (Optional, CLI only users don't need this).
4. Permissions → Create a new group called Developers.
5. Attach policy: AmazonS3ReadOnlyAccess (example of least privilege).
6. Complete user creation.

💡 The dev-user now has read-only access to S3 buckets and cannot perform other actions.

🔒 Step 4 — Apply the Principle of Least Privilege

1. Go to Policies in IAM.
2. Click Create policy → Choose JSON editor.
3. Example custom policy (allows only listing S3 buckets):

```
{
 "Version": "2012-10-17",
 "Statement": [
  {
   "Effect": "Allow",
   "Action": [
    "s3:ListAllMyBuckets",
    "s3:GetBucketLocation"
   ],
   "Resource": "*"
  }
 ]
}
```

4. Save policy as S3ListOnlyPolicy.
5. Attach it to dev-user.

💡 Always start with minimal permissions → add more if required.

🔑 Step 5 — Enable Multi-Factor Authentication (MFA)

1. IAM → Users → Select admin-user.
2. Go to Security credentials → Assign MFA device.
3. Choose Authenticator App (Google Authenticator or Authy).

4. Scan QR code → Enter 2 codes from the app → Finish.
5. MFA now protects your admin login.

💡 Best practice: Always enable MFA for root user and admin accounts.

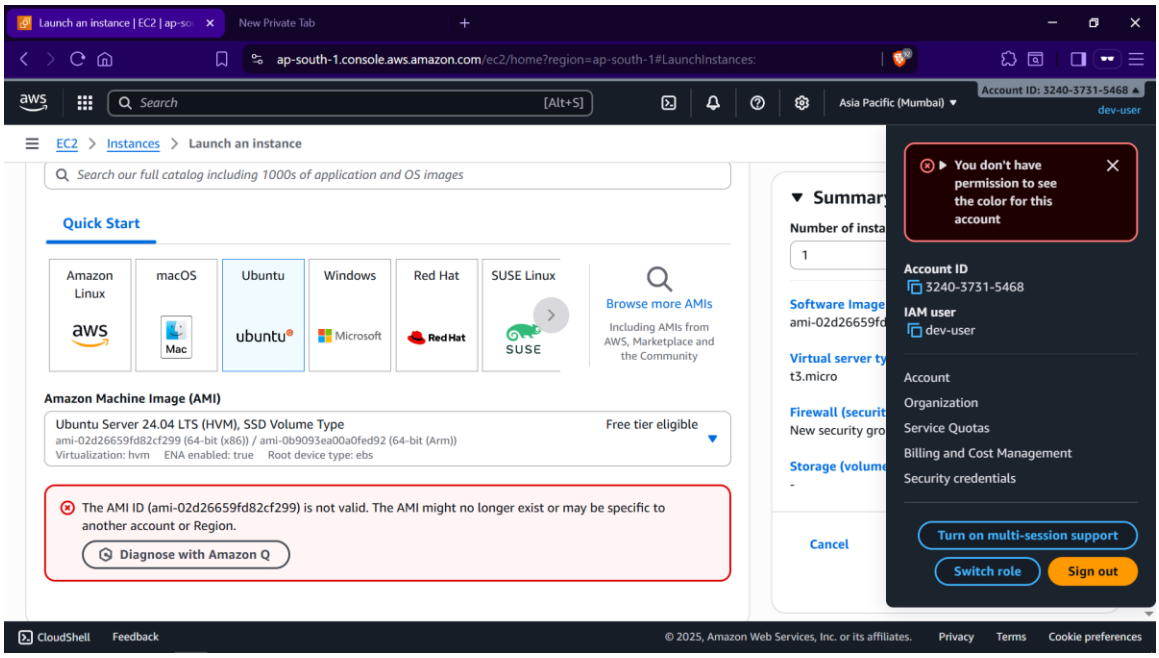
🧪 Step 6 — Test the Setup

- Log in as dev-user → Try accessing EC2 → Access Denied (expected).
- Try listing S3 buckets → Works ✅.
- Log in as admin-user → Full access with MFA prompt ✅.

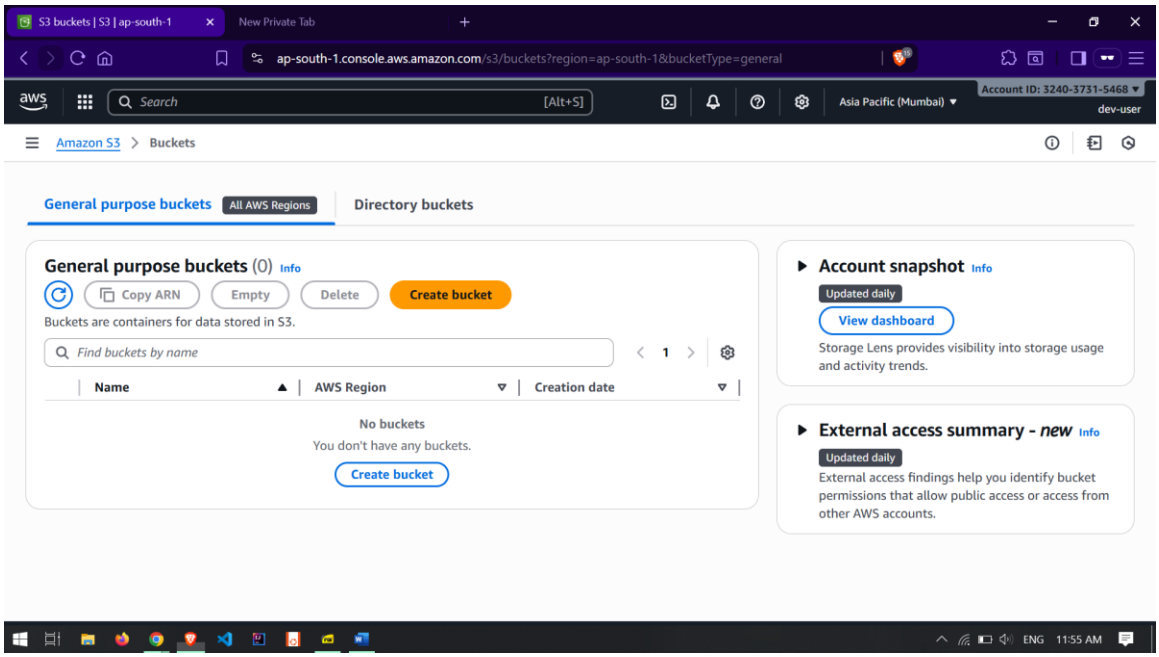
🧹 Step 7 — Cleanup (Optional)

If this was just practice:
1. Delete test users/groups/policies.
2. Keep only admin-user + MFA.

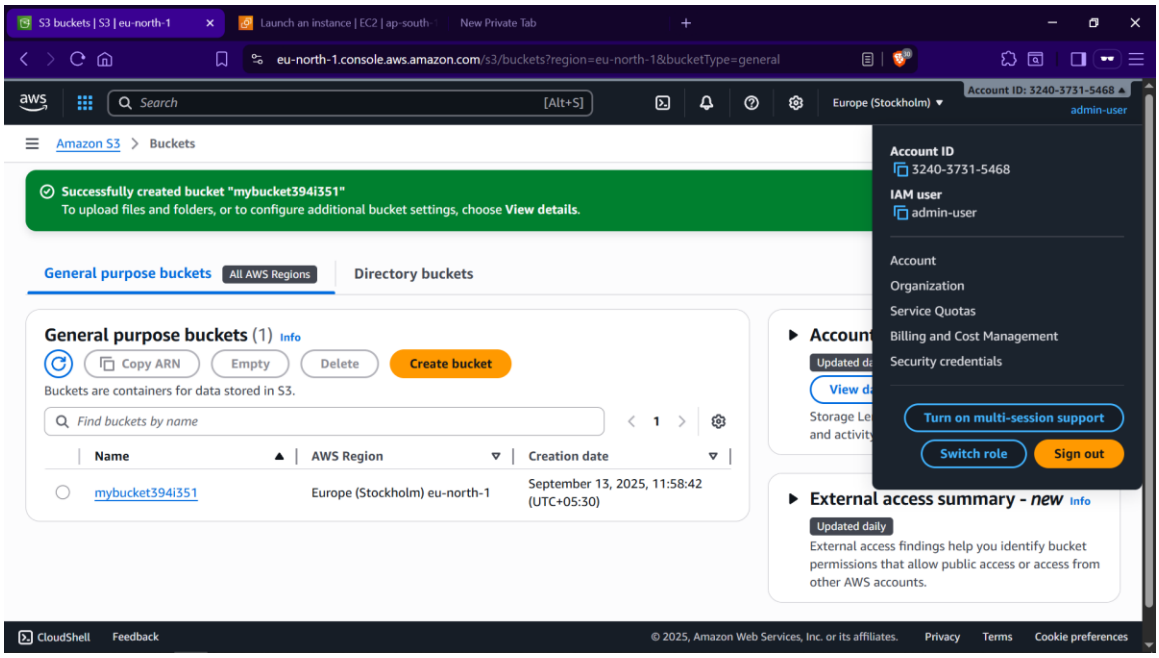
✅ Congratulations! You've completed your first AWS IAM Lab and secured your AWS environment using best practices.



dev-user cannot create ec2 instance



dev-user can list S3 Buckets



admin-user has all permissions