1. AWS CLI Practice

Task: Create and List IAM Users using AWS CLI

Create a new IAM user:

```
bash
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aws iam create-user --user-name bob123
```

List all existing IAM users:

```
bash
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aws iam list-users
```

Explanation:

- The AWS Command Line Interface (CLI) allows direct interaction with AWS services from the terminal.
- `create-user` is used to add a new IAM user.
- `list-users` fetches and displays a list of all IAM users in your AWS account.
- Before running CLI commands, make sure to configure credentials using:

```
bash
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aws configure
```

This sets the access key, secret key, default region, and output format.

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2. AWS SDK (Boto3 in Python) – Automation and Scripting

Task: Write a Python script using Boto3 to manage IAM and S3

Python Script:

```
import boto3

# Create an IAM client
iam = boto3.client('iam')

# List IAM users
response = iam.list_users()
for user in response['Users']:
    print("User Name:", user['UserName'])

# Create an S3 bucket
s3 = boto3.client('s3')
bucket_name = "unique-bucket-name-chetan123"
region = "ap-south-1"

s3.create_bucket(
    Bucket=bucket_name,
    CreateBucketConfiguration={'LocationConstraint': region}
)

print(f"S3 Bucket '{bucket_name}' created successfully.")
```

Explanation:

- **Boto3** is the AWS SDK for Python. It allows you to write Python scripts to automate AWS tasks.

- This script does two things:
  - Lists all existing IAM users using `list_users()`.
  - Creates a new S3 bucket in the specified region.
- Make sure to install Boto3 using `pip install boto3` and set up your AWS credentials using AWS CLI or `.aws/credentials` file.

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3. Latency Analysis

Task: Identify Lowest Latency AWS Region

- Use https://www.cloudping.info to test latency from your current location to various AWS regions.

Steps:

1. Visit the website and click on "Start Ping Test".
2. It measures round-trip times (in milliseconds) to AWS regions like `ap-south-1` (Mumbai), `us-east-1` (N. Virginia), etc.
3. Note the region with the **lowest latency** – usually, it's your geographically nearest one.

Analysis:

- In most cases in India, `ap-south-1` (Mumbai) shows the lowest latency.
- If possible, test with different ISPs (e.g., home broadband vs. mobile hotspot) to see latency differences.

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4. AWS Web Console Navigation

Task 1: Explore IAM Dashboard via Console

- Log in to the AWS Console and open **IAM Service**.
- Create a new IAM user manually.
- Assign programmatic access and attach policies like `AdministratorAccess`.

- Download the credentials `.csv` file.

Task 2: Enable Multi-Factor Authentication (MFA)

Steps:

1. Go to the **My Security Credentials** section under your account.
2. Under "Multi-Factor Authentication (MFA)", click “Activate MFA”.
3. Choose "Virtual MFA device" and use an app like Google Authenticator to scan the QR code.
4. Enter the 2 codes shown to verify and enable MFA.

Explanation:

- MFA adds an extra layer of security to prevent unauthorized access to your AWS account, especially for the root user.
- It’s a best practice to enable MFA on all IAM users and root accounts.

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5. AWS CLI Advanced Tasks

Task 1: Delete IAM User

```
bash
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aws iam delete-user --user-name TestUser
```

Task 2: Launch an EC2 Instance via CLI

```
bash
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aws ec2 run-instances \
    --image-id ami-0abcdef1234567890 \
    --count 1 \
    --instance-type t2.micro \
```

```
    --key-name MyKeyPair \
    --security-groups my-security-group \
    --region ap-south-1
```

Notes:

- Replace `ami-0abcdef1234567890` with a valid AMI ID (Amazon Linux, Ubuntu, etc.).
- `t2.micro` is eligible under the free tier.
- Ensure that the key pair and security group are already created.

Explanation:

- The EC2 launch via CLI demonstrates infrastructure provisioning using command-line tools.
- CLI automation is useful for DevOps, scripting deployments, and scalable resource creation.

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6. Region & Service Validation

Task: Check Available Services in Different AWS Regions

CLI Method:

```
bash
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aws ec2 describe-regions --all-regions \
    --query "Regions[*].[RegionName,OptInStatus]" \
    --output table
```

Console Method:

1. Open AWS Console.
2. Use the **Region dropdown** (top right) to switch between regions.

3. Try launching a service like **Glue** or **Redshift** in `ap-south-1` and `ap-south-2` and compare availability.

Findings:

- Some services may be **region-limited**, especially newer regions like `ap-south-2` (Hyderabad).
- Always validate service availability before planning deployments.

Summary Table

Task	Tool Used	Description
IAM user creation/listing	AWS CLI	Basic IAM operations via terminal
IAM + S3 automation	Python Boto3	Programmatic AWS access and automation
Latency analysis	cloudping.info	Identify nearest region for lowest latency
IAM Console navigation	AWS Console	Manual user creation and MFA setup
IAM user deletion + EC2	AWS CLI	Advanced CLI-based provisioning
Region validation	CLI + Console	Compare available services across regions