Launch an EC2 Instance to monitor the instance's CPU utilization using CloudWatch. If CPU usage goes above 70% for 5 minutes, an alarm should be triggered

Step1 : Go to AWS Management Console → Navigate to EC2.

Select your instance → Click Actions → Monitor and troubleshoot → Manage CloudWatch alarms.

Under Monitoring, enable Detailed Monitoring (optional but recommended).

Step2 : Connect to EC2 and Set Up Python Bash Shell

Connect to your EC2 instance via SSH

Create a new Python file: nano cloud_watch.py

Add the following code inside cloud_watch.py

```python
import time

def simulate_cpu_spike(duration=30, cpu_percent=80):
    print(f"Simulating CPU spike at {cpu_percent}%...")
    start_time = time.time()

    # Calculate the number of iterations needed to achieve the desired CPU utilization
    target_percent = cpu_percent / 100
    total_iterations = int(target_percent * 5_000_000)  # Adjust the number as needed

    # Perform simple arithmetic operations to spike CPU utilization
    for _ in range(total_iterations):
        result = 0
        for i in range(1, 1001):
            result += i

    # Wait for the rest of the time interval
    elapsed_time = time.time() - start_time
    remaining_time = max(0, duration - elapsed_time)
    time.sleep(remaining_time)

    print("CPU spike simulation completed.")

if __name__ == '__main__':
    # Simulate a CPU spike for 30 seconds with 80% CPU utilization
    simulate_cpu_spike(duration=30, cpu_percent=80)
```

Give execution permissions: chmod a+x cloud_watch.py

Run the script : python3 cloud_watch.py

script is running and spiking CPU usage

Step 3: Set up **Amazon CloudWatch** to monitor the instance and trigger an alarm when CPU usage reaches **60%**.

Navigate to **CloudWatch** in AWS **--->** Create Alarm

Click **Select metric**.

Under **Browse**, select:

- **EC2 → Per-Instance Metrics → CPUUtilization**.

Choose your **EC2 instance** from the list.

Click **Select metric**.

Under **Conditions**:

- **Threshold type**: Static

- **Whenever CPU utilization is** → Greater than → 60%

- **For at least** 5 consecutive minutes → click next

Under **Notification**, choose **Create new SNS topic**.

Enter a name .

Add your **email address**.

Click **Create topic**.

Give the alarm a name (e.g., EC2-CPU-High-Alarm).

Review the details.

Click **Create alarm**.

Ensure your Python script is running (cpu_spike.py).

Wait for CPU usage to cross **60% for 5 minutes**.

Check your email for an **SNS notification**!

CloudWatch alarm has successfully triggered, as indicated by the **"In alarm"** status. This confirms that the CPU utilization exceeded **60%**, and the alarm is active.