Experiment 5

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Branch:- BE-IT **Section/Group:- 22BET-IOT-701'A'**

Semester:- 6th **Date of Performance:-**

Subject Name: Cloud Iot Edge ML Lab **Subject Code: 22ITP-351**

1. **Aim:** Set up a system using IoT sensor data to AWS IoT Core and store it in an S3 bucket.

2. **Objective:** To demonstrate the process of integrating IoT sensors with AWS IoT Core, transmitting sensor data, and storing the data in AWS S3 for further analysis.

3. **Hardware Used:**

1. IoT Sensor (Temperature, Humidity, or CO2 Sensor)
2. Microcontroller (e.g., ESP8266, ESP32, or Raspberry Pi)
3. AWS IoT Core
4. AWS S3 Bucket

4. **Procedure:**

Create S3 Bucket:

1. Log in to your AWS account.
2. Type "S3" in the search box and select S3 from the services menu.
3. Click "Create bucket."

4. Enter the bucket name: s3-bucket-for-iot-data. 5. Select AWS region (e.g., US East - us-east-1).
6. Click "Create bucket" at the bottom. Create an IoT Rule to Send Data to S3:

7. Search for "IoT Core" and select it.
8. Click "Act" on the left panel, then select "Rules" on the right.
9. Click "Create."
10. Enter the rule name: IoT_data_rule_for_S3.
11. Select the SQL version: 2016-03-23.
12. Rule Query: SELECT * FROM 'iotdevice/+/datas3'.
13. Click "Add action" > "Store a message in an Amazon S3 bucket" > "Configure action."
14. Choose the S3 bucket: s3-bucket-for-iot-data.
15. In the key, enter: ${cast(topic(2) AS DECIMAL)}/${timestamp()}.
16. Create a role: Enter "Iotdata_S3_role" and click "Create role." 17. Click "Add action" and then "Create rule."

Test IoT Rule and S3:

18. Go to the AWS IoT Core dashboard.
19. Select "Test" on the left panel and open the MQTT test client.
20. Enter Topic name: iotdevice/55/datas3.
21. Message payload: {"temperature": 22, "humidity": 88, "co2": 455}.
22. Click "Publish."
23. Open the S3 console, navigate to the bucket, and verify the uploaded data.

5. Output:

1. Successfully transmitted IoT sensor data to AWS IoT Core. 2. Data stored in AWS S3 bucket for future analysis.

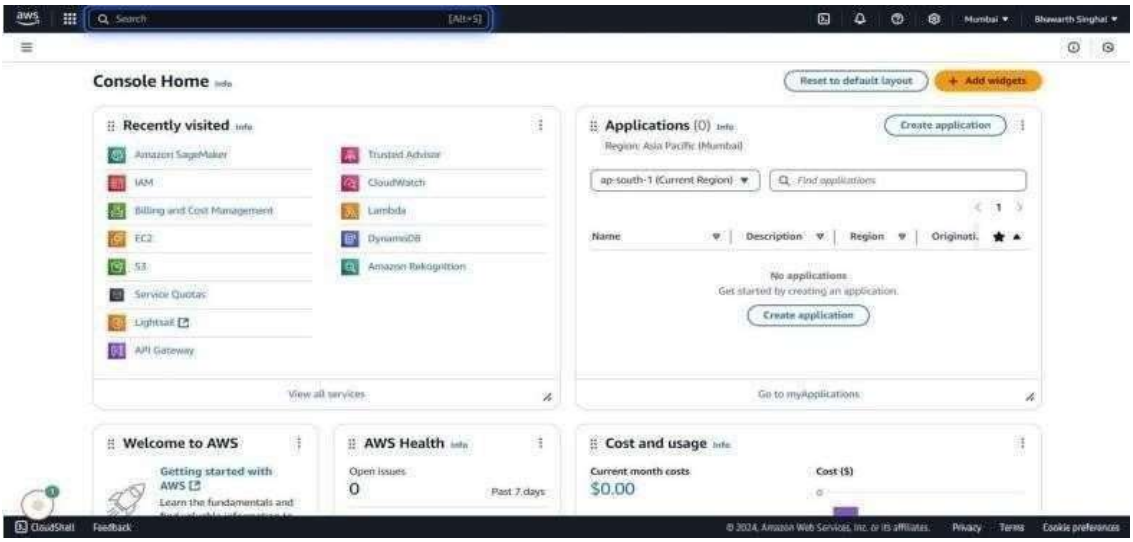

Fig.1 Go to AWS Console A3 Bucket

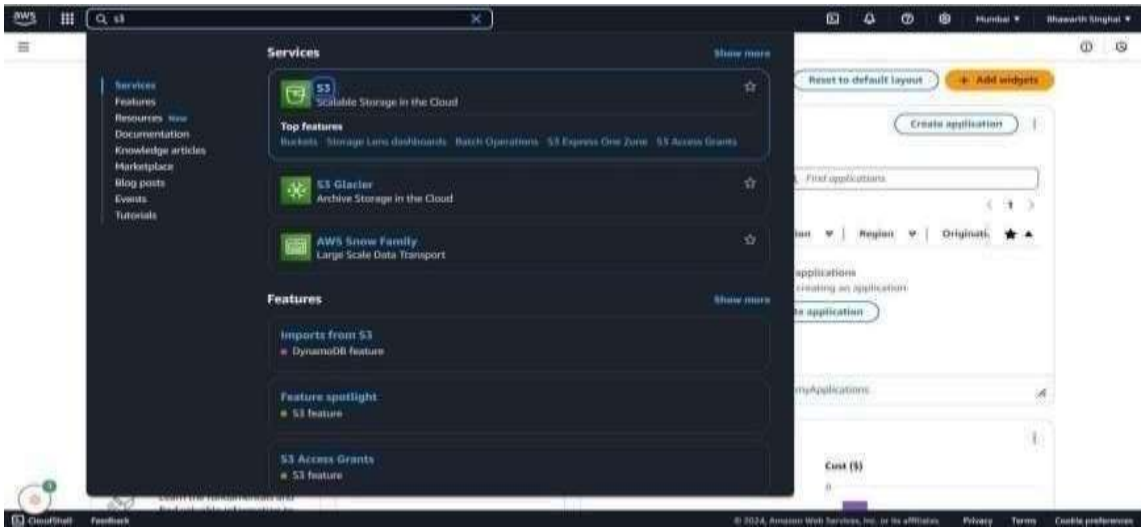

Fig.2 Click on S3

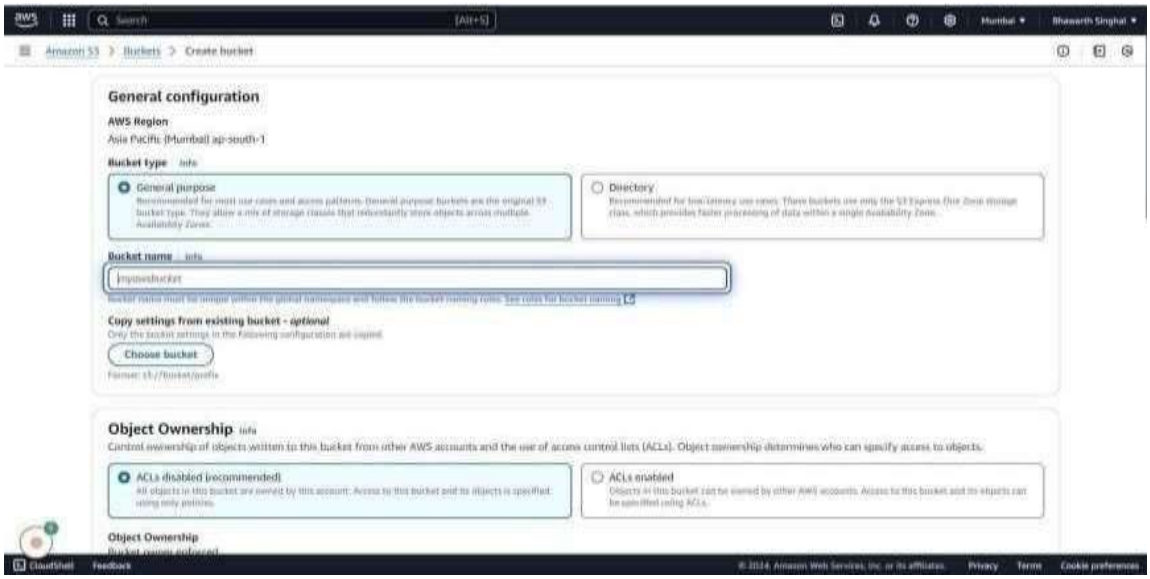

Fig.3 Create a bucket and name it

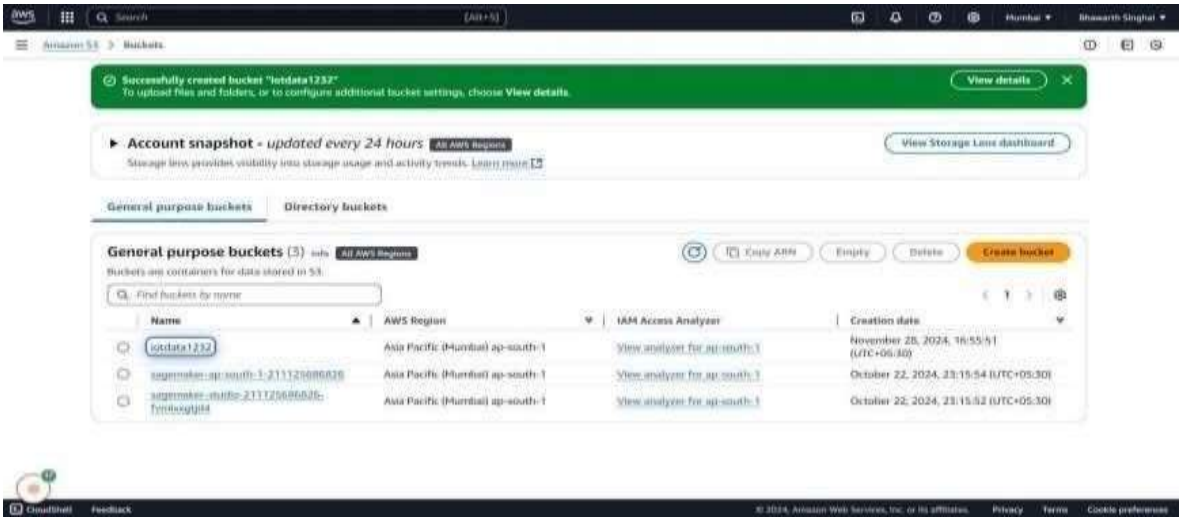

Fig.4 Bucket created succesfully

Fig.5 Store a message in an Amazon S3 bucket

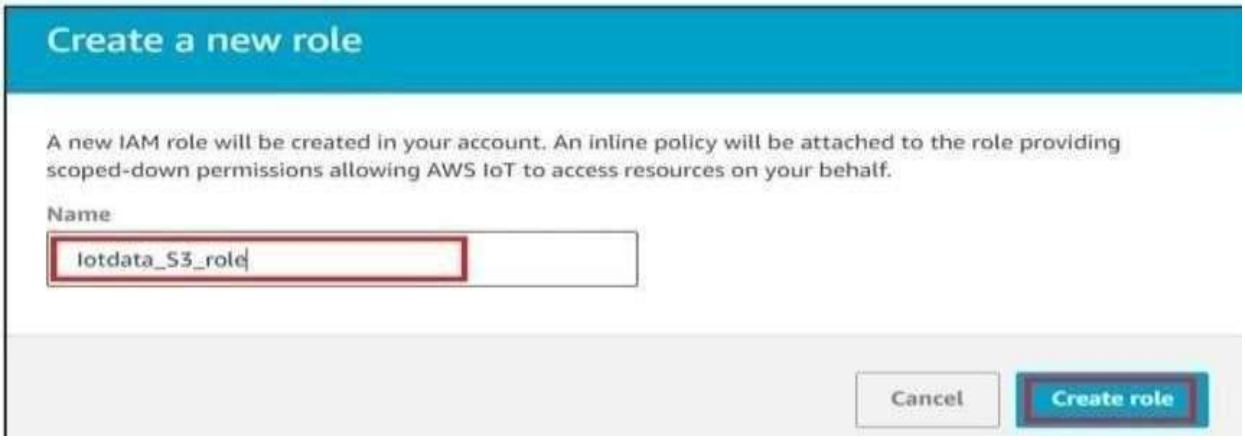

Fig.6 Create Iotdata_S3_rule for S3

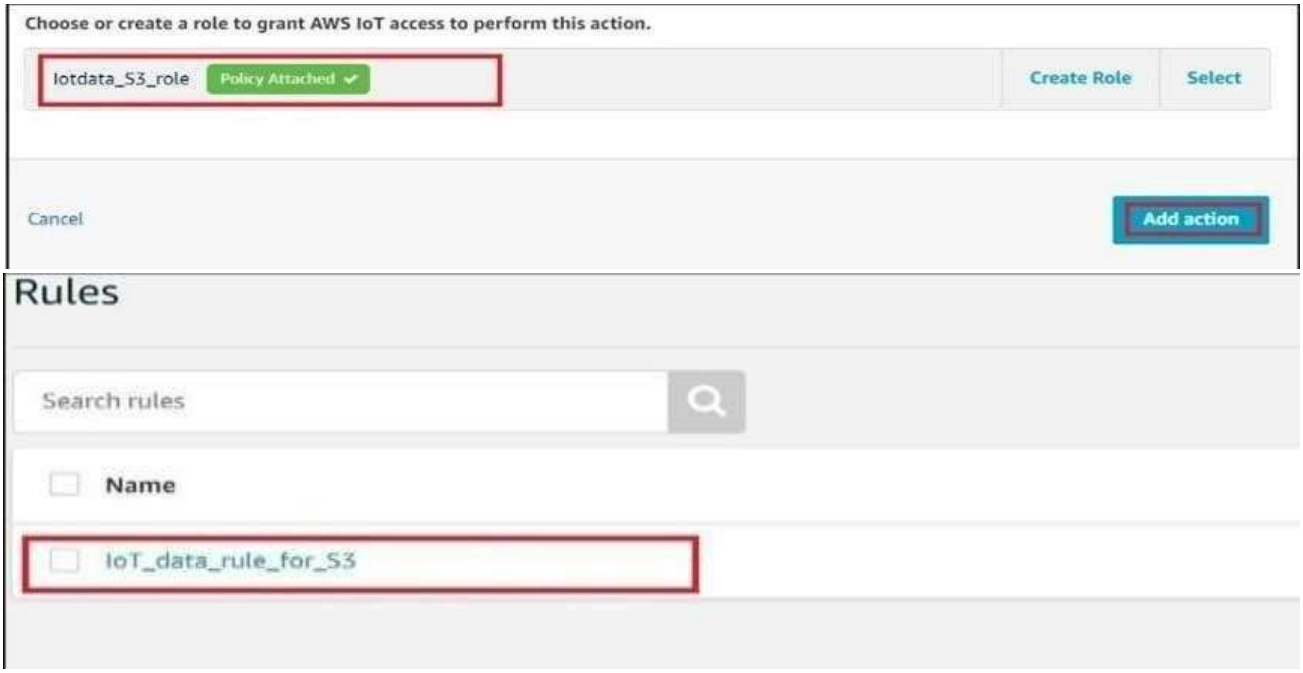

Fig.7 Create rule at the bottom of the Create a rule page to create the rule

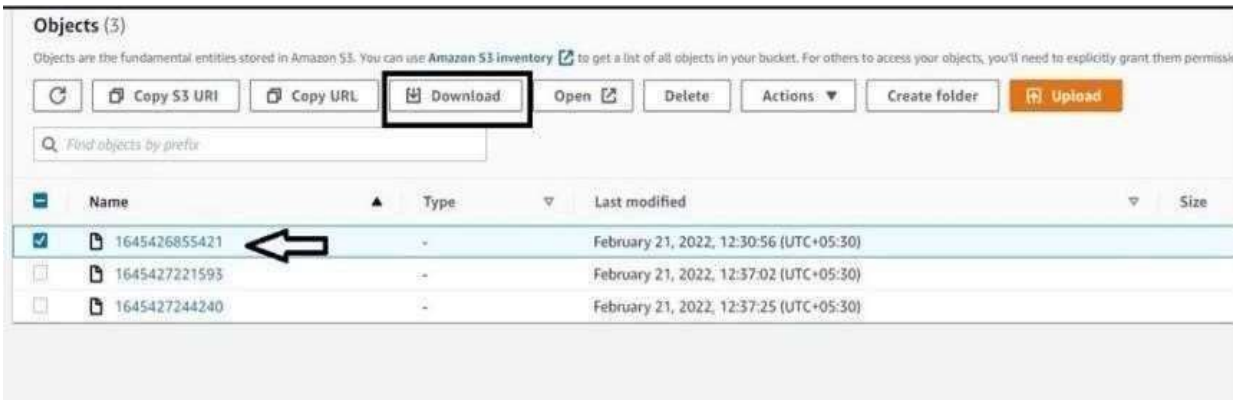

Fig.8 Download to see the data

6. Conclusion

This study provides practical insights into AWS IoT Core integration for real-time data transmission and efficient IoT data storage using AWS S3. By leveraging the MQTT protocol, seamless sensor data communication is achieved, ensuring reliable and scalable cloud-based IoT architecture. This knowledge enhances the ability to develop robust IoT solutions with cloud integration for real-world applications.