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Experiment 5

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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.

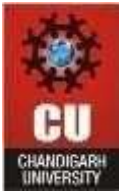
3. Hardware Used:

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."



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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.



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5. Output:

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

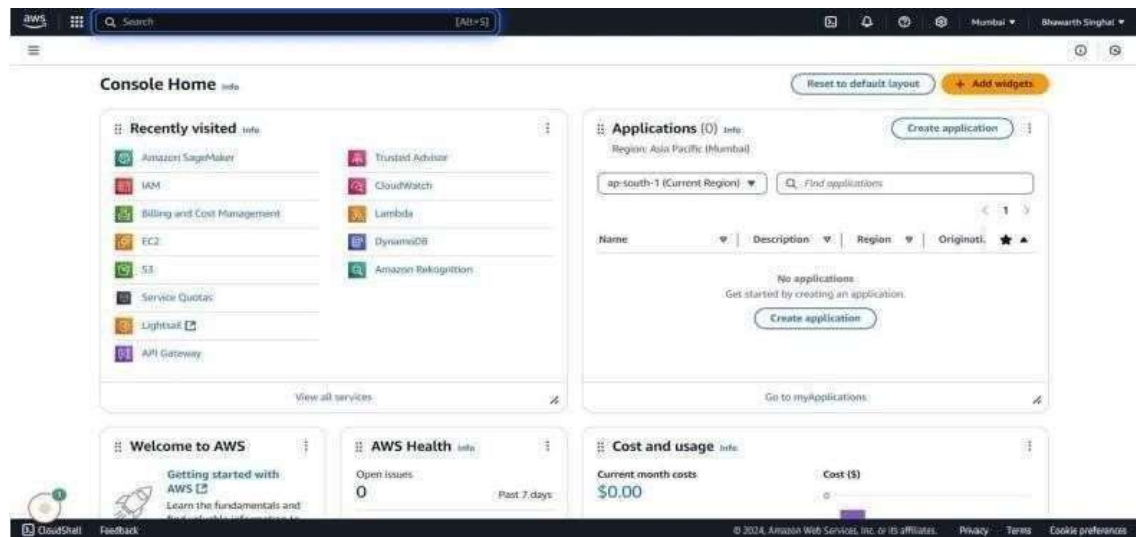


Fig.1 Go to AWS Console A3 Bucket

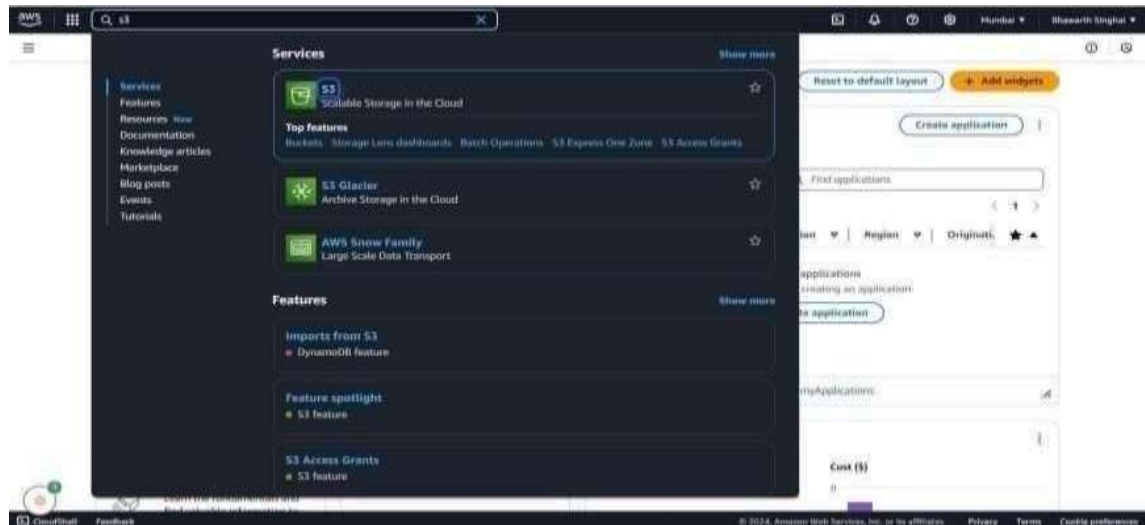


Fig.2 Click on S3

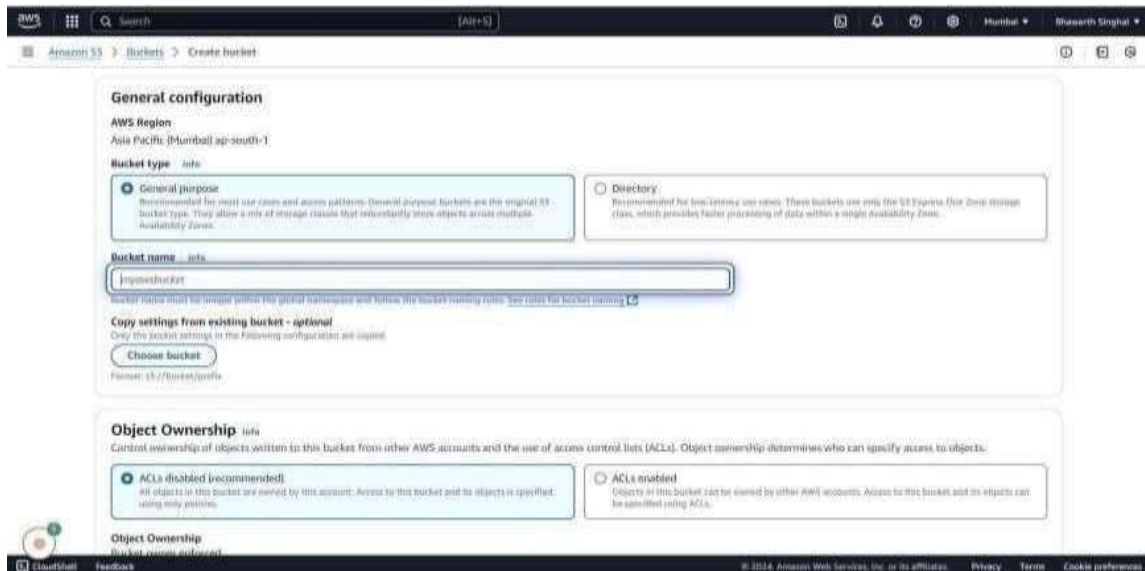


Fig.3 Create a bucket and name it

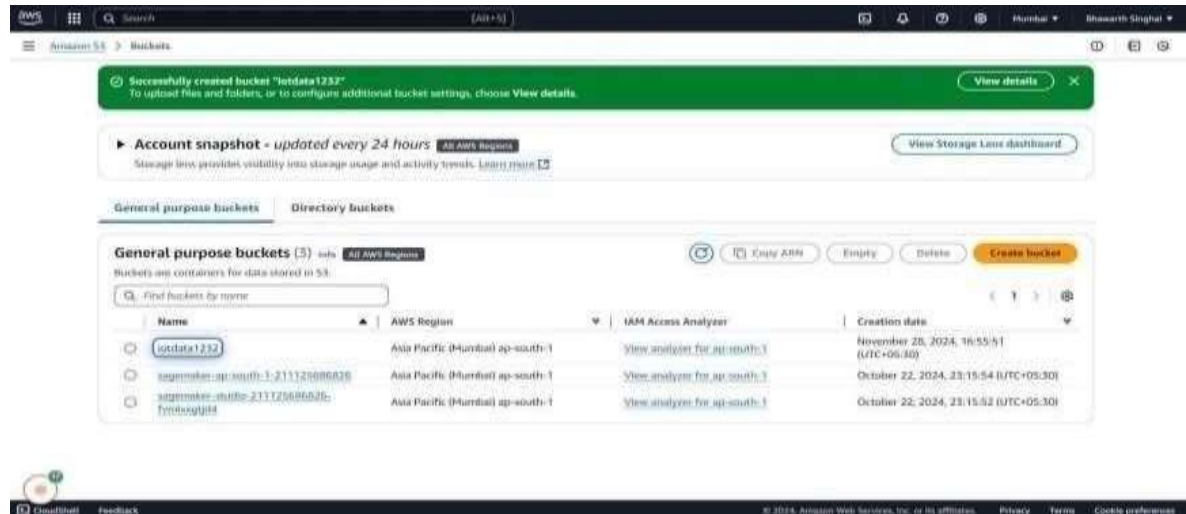


Fig.4 Bucket created successfully



Fig.5 Store a message in an Amazon S3 bucket

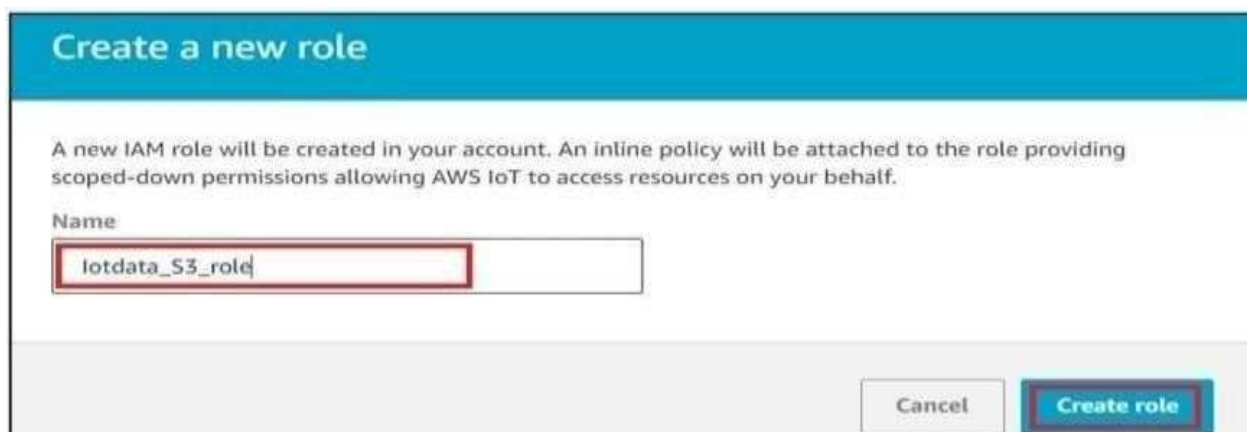


Fig.6 Create Iotdata_S3_rule for S3

Choose or create a role to grant AWS IoT access to perform this action.

iotdata_S3_role	Policy Attached ✓	Create Role	Select
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Cancel Add action

Rules

Search rules

<input type="checkbox"/>	Name
<input type="checkbox"/>	IoT_data_rule_for_S3

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

Objects (3)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permission.

Refresh Copy S3 URI Copy URL Download Open Delete Actions Create folder Upload

Find objects by prefix

<input type="checkbox"/>	Name	Type	Last modified	Size
<input checked="" type="checkbox"/>	1645426855421	-	February 21, 2022, 12:30:56 (UTC+05:30)	
<input type="checkbox"/>	1645427221593	-	February 21, 2022, 12:37:02 (UTC+05:30)	
<input type="checkbox"/>	1645427244240	-	February 21, 2022, 12:37:25 (UTC+05:30)	

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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.