CAPSTONE PROJECT

CLOUD-POWERED TRAVEL DIARIES:

A FULL-STACK AMPLIFY REACT APPLICATION

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CONTENT

INTRODUCTION

PROBLEM STATEMENT:

- Traditional web apps require heavy backend setup, leading to high costs and complexity.

SOLUTION:

- Use of AWS Amplify for a serverless, cloud-based travel diary app.

Amazon Cognito

KEY FEATURES:

- Authentication: Amazon Cognito
- Database: DynamoDB
- Storage: Amazon S3
- API: GraphQL with AWS AppSync

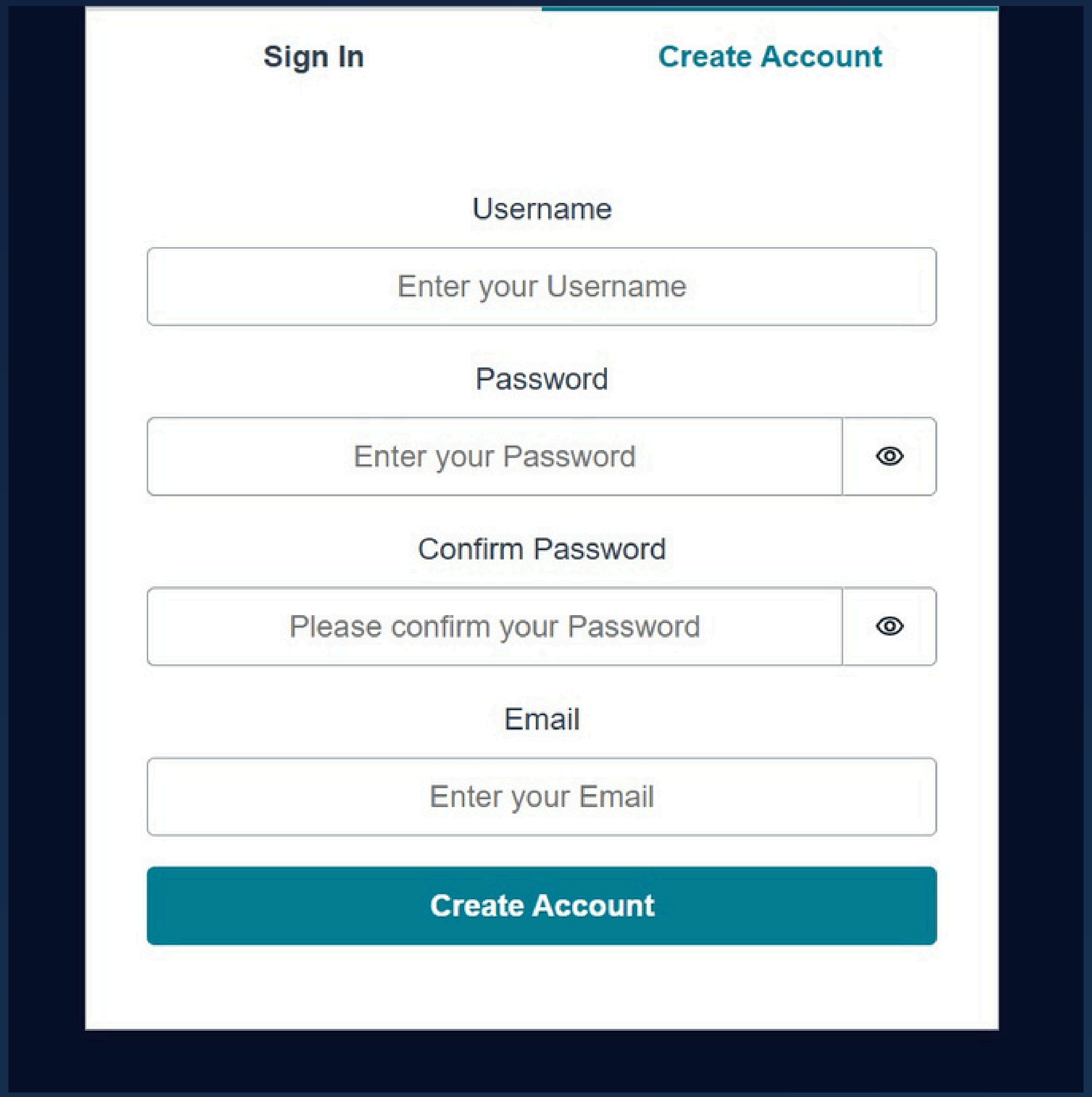
Amazon DynamoDB

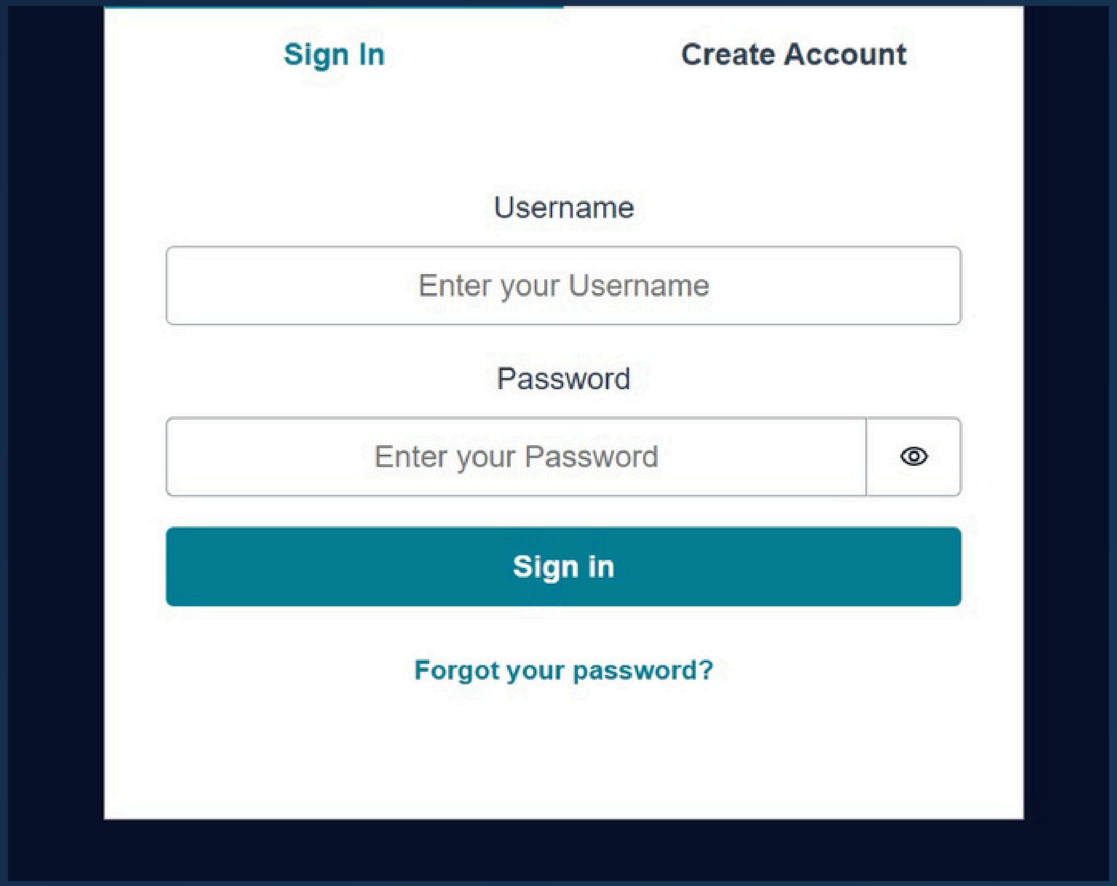
S3 Bucket

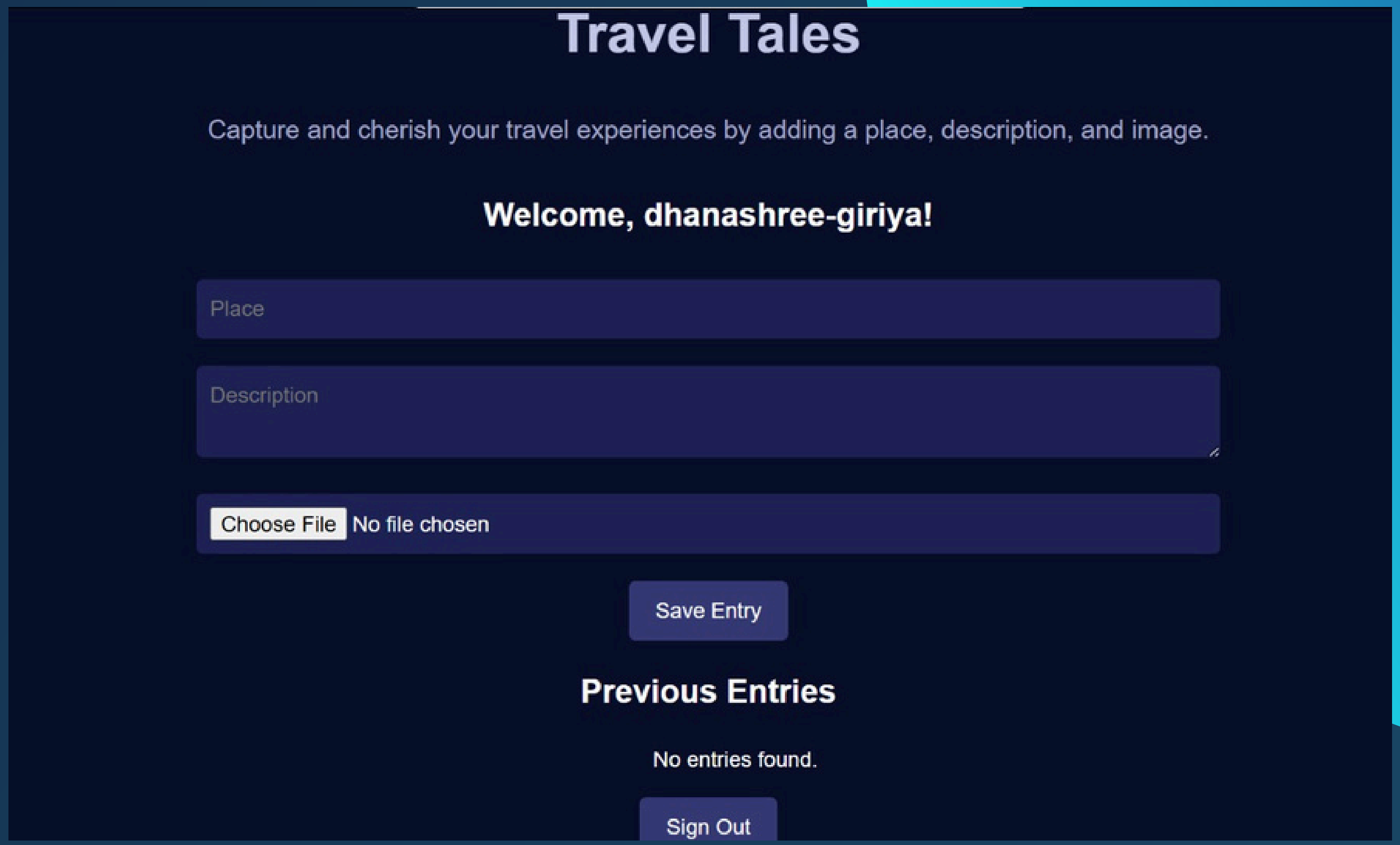
AWS AppSync + GraphQL

OBJECTIVES

- To build a full-stack travel journal using AWS Amplify.
- To leverage cloud services for scalability, security, and cost-efficiency.
- To simplify backend management with pre-configured services.
- To provide a user-friendly React frontend with real-time updates.






Travel Tales

Capture and cherish your travel experiences by adding a place, description, and image.

Welcome, dhanashree-giriya!

Previous Entries

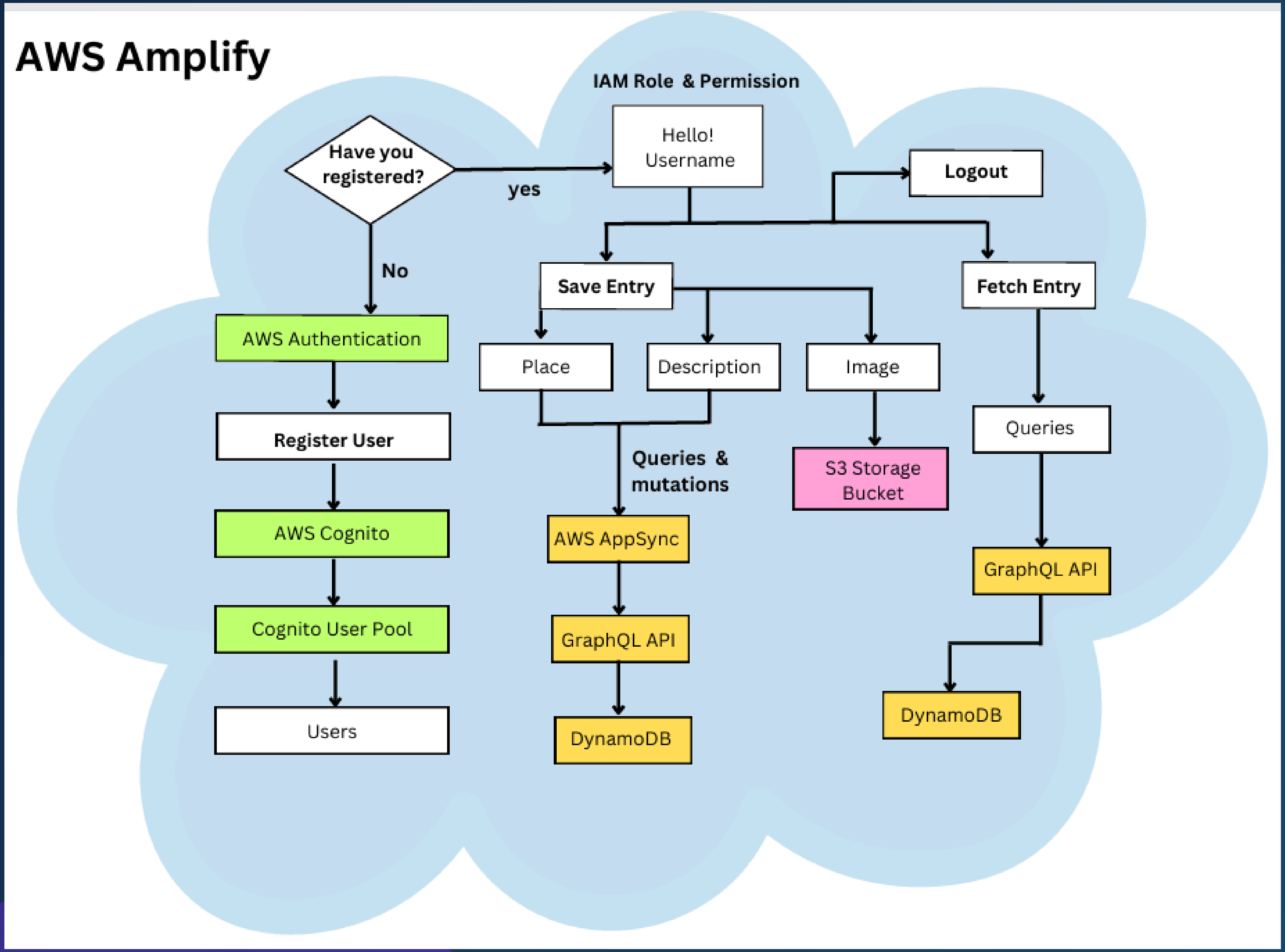
No entries found.

The Travel Tales app's user flow including a registration screen for creating accounts, a login screen for signing in, and the main interface for adding and viewing travel entries with place, description, and image uploads.

SYSTEM DESIGN & ARCHITECTURE

- Architecture: Serverless, cloud-native

- Components:
  - Frontend: React.js
  - Backend: AWS Amplify
  - Database: DynamoDB
  - Storage: Amazon S3
  - Authentication: Amazon Cognito



TECHNICAL STACK

Frontend :

- React.js:
  A JavaScript library for building dynamic and responsive user interfaces.

Backend :

- AWS Amplify:
  Provides pre-configured backend services like authentication, database, and storage.

Database :

- Amazon DynamoDB:
  A NoSQL database for storing travel entries.

Storage :

- Amazon S3:
  Scalable cloud storage for user-uploaded images.

Authentication :

- Amazon Cognito:
  Manages user authentication (sign-up, login, session management).

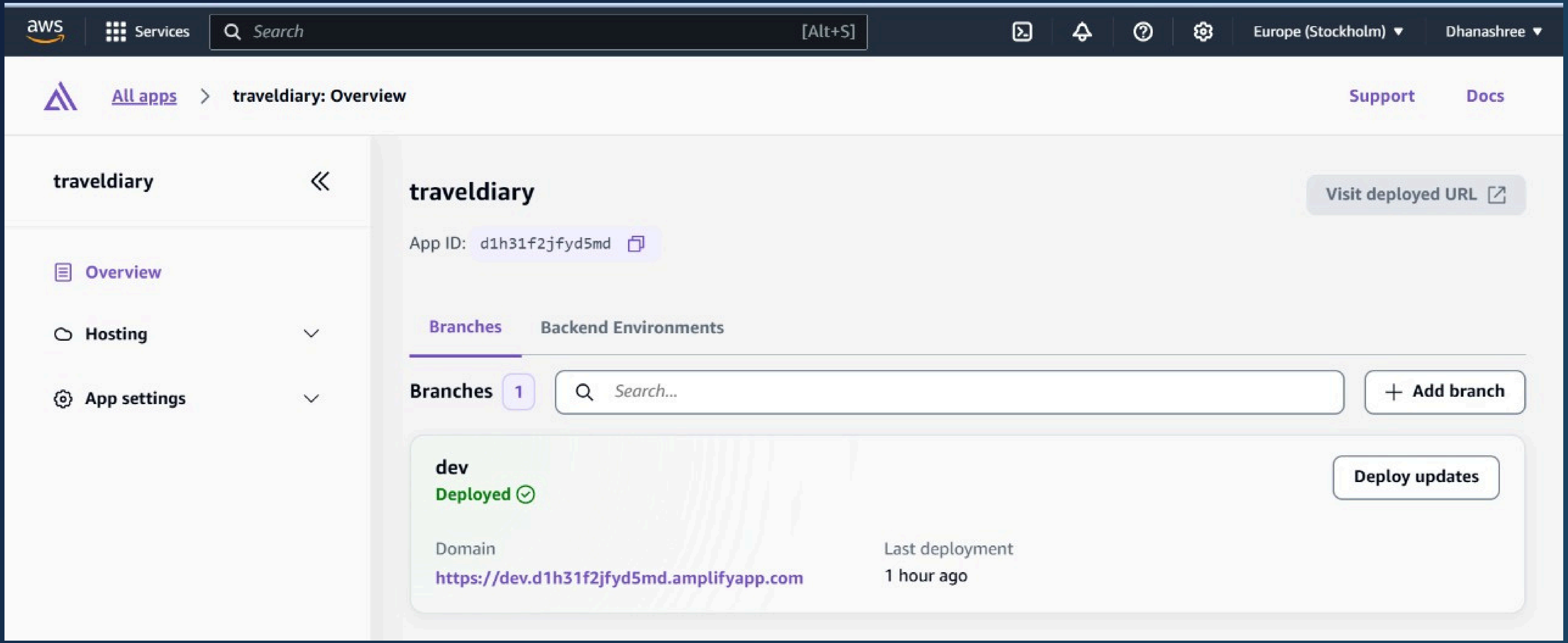
API :

- AWS AppSync (GraphQL):
  Enables real-time data synchronization between frontend and backend.

IMPLEMENTATION

- AWS Amplify Setup:

AWS Amplify Hosting : Automated deployment and hosting of the React app.



traveldiary: Overview

traveldiary

App ID: d1h31f2jfyd5md

Branches 1

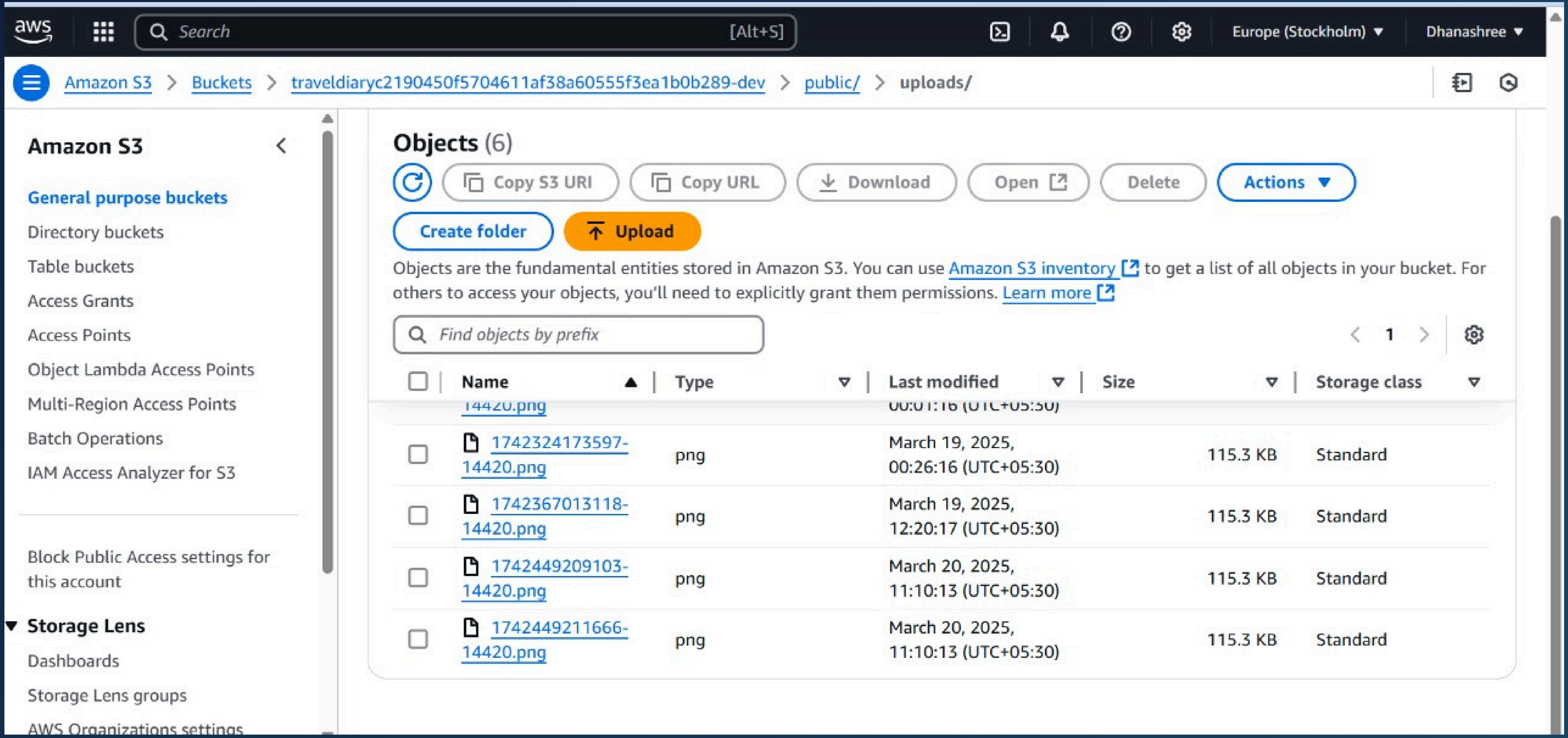
dev
Deployed

Domain
https://dev.d1h31f2jfyd5md.amplifyapp.com

Last deployment
1 hour ago

- Amazon S3 for Image Storage :

Scalable storage for user-uploaded images.

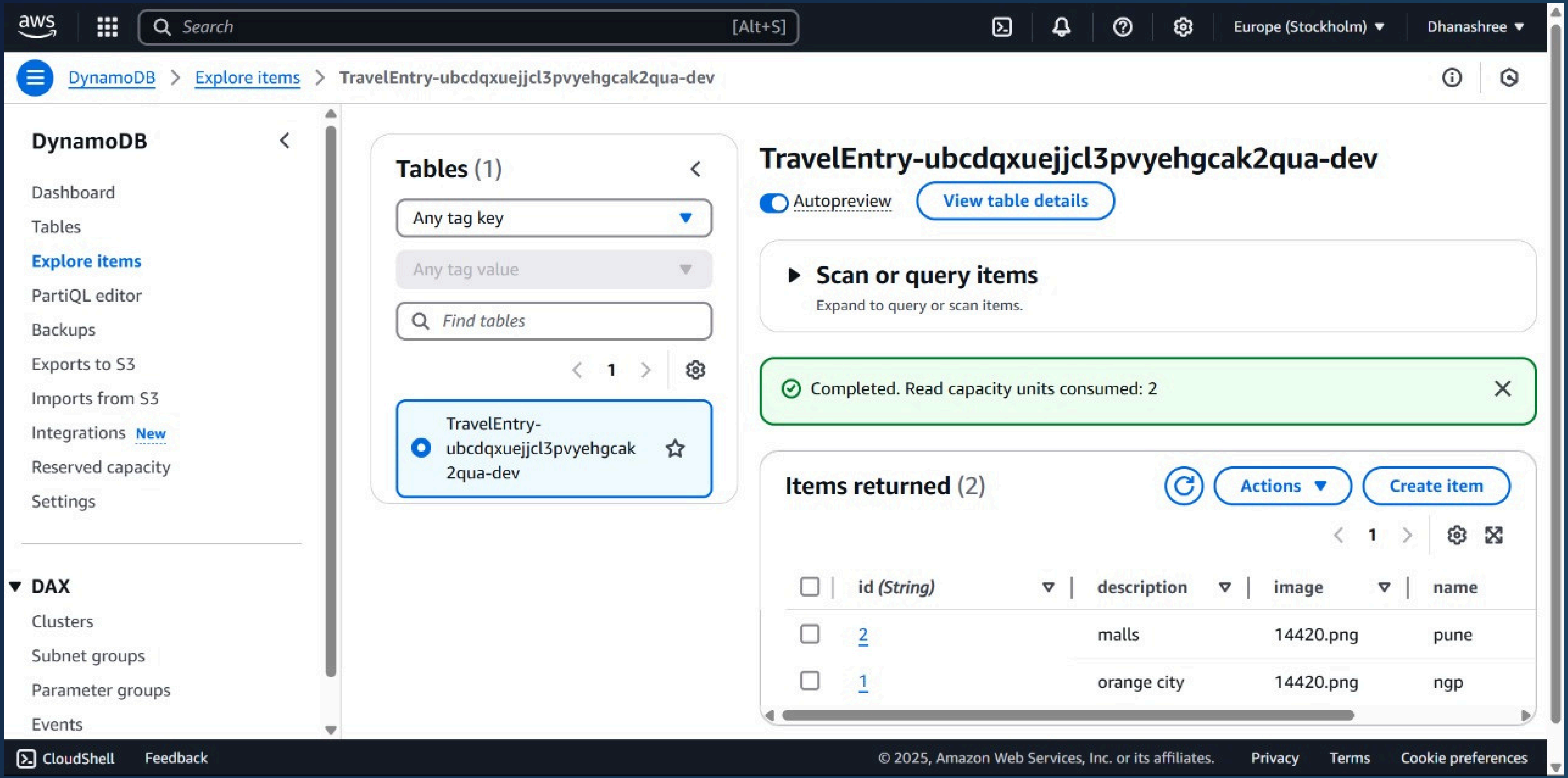


Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Name	Type	Last modified	Size	Storage class
14420.png		00:01:16 (UTC+05:30)		
1742324173597-14420.png	png	March 19, 2025, 00:26:16 (UTC+05:30)	115.3 KB	Standard
1742367013118-14420.png	png	March 19, 2025, 12:20:17 (UTC+05:30)	115.3 KB	Standard
1742449209103-14420.png	png	March 20, 2025, 11:10:13 (UTC+05:30)	115.3 KB	Standard
1742449211666-14420.png	png	March 20, 2025, 11:10:13 (UTC+05:30)	115.3 KB	Standard

- DynamoDB for Database Management:

NoSQL database for storing travel entries.



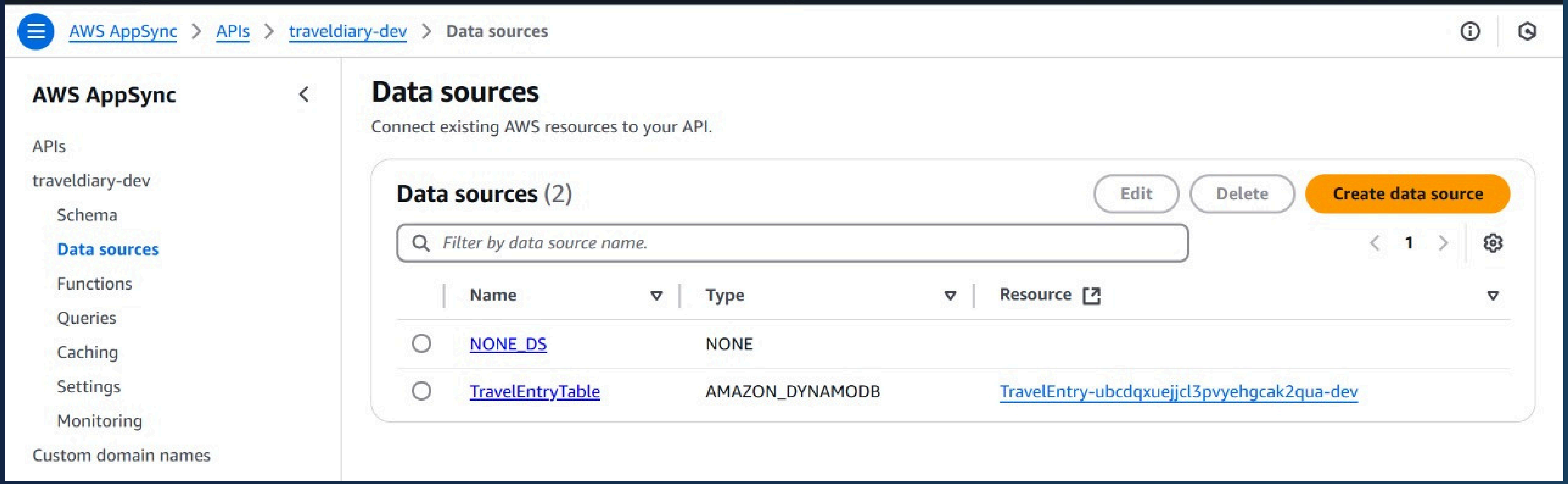
TravelEntry-ubcdqxuejjcl3pvyehgcak2qua-dev

Completed. Read capacity units consumed: 2

Items returned (2)

id (String)	description	image	name
2	malls	14420.png	pune
1	orange city	14420.png	ngp

- AWS AppSync for GraphQL API : GraphQL API for real-time data synchronization.



AWS AppSync > APIs > traveldiary-dev > Data sources

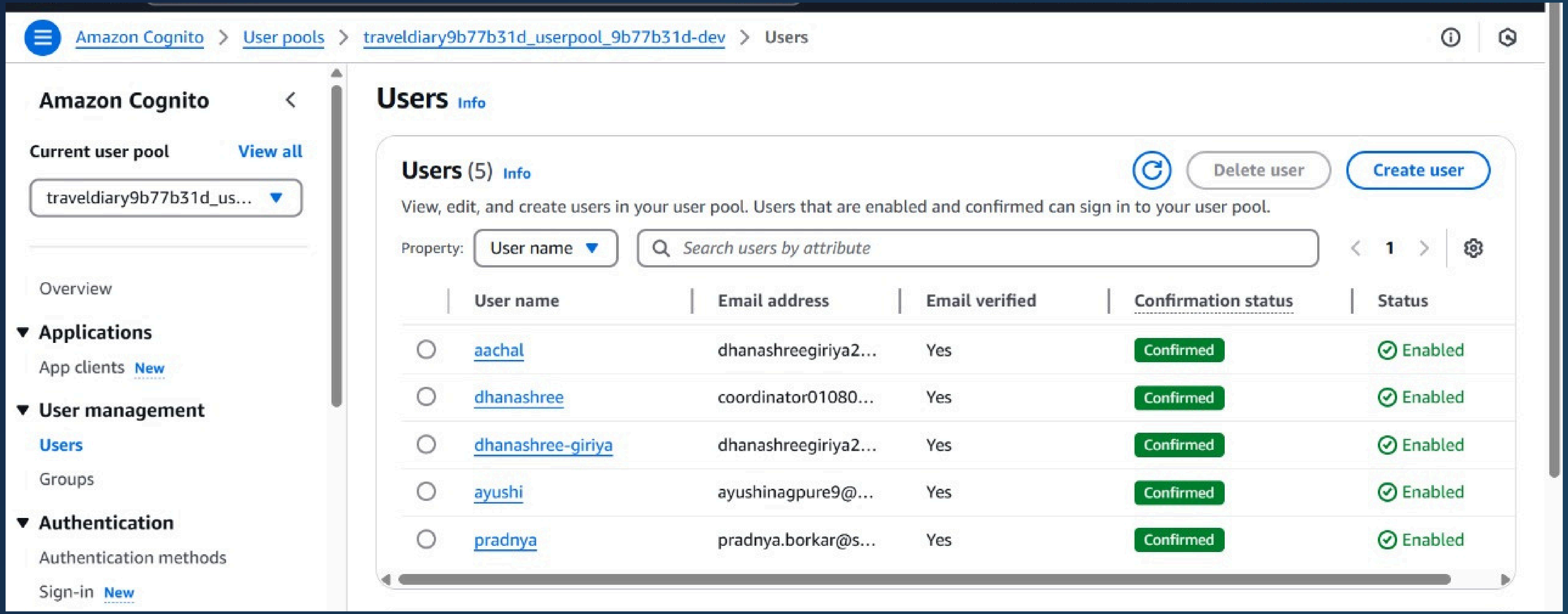
Data sources

Connect existing AWS resources to your API.

Data sources (2)

Name	Type	Resource
NONE_DS	NONE	
TravelEntryTable	AMAZON_DYNAMODB	TravelEntry-ubcdqxuejjcl3pvyehgcak2qua-dev

- Amazon Cognito for Authentication : Secure user authentication and session management.



Amazon Cognito > User pools > traveldiary9b77b31d_userpool_9b77b31d-dev > Users

Users Info

Users (5) Info

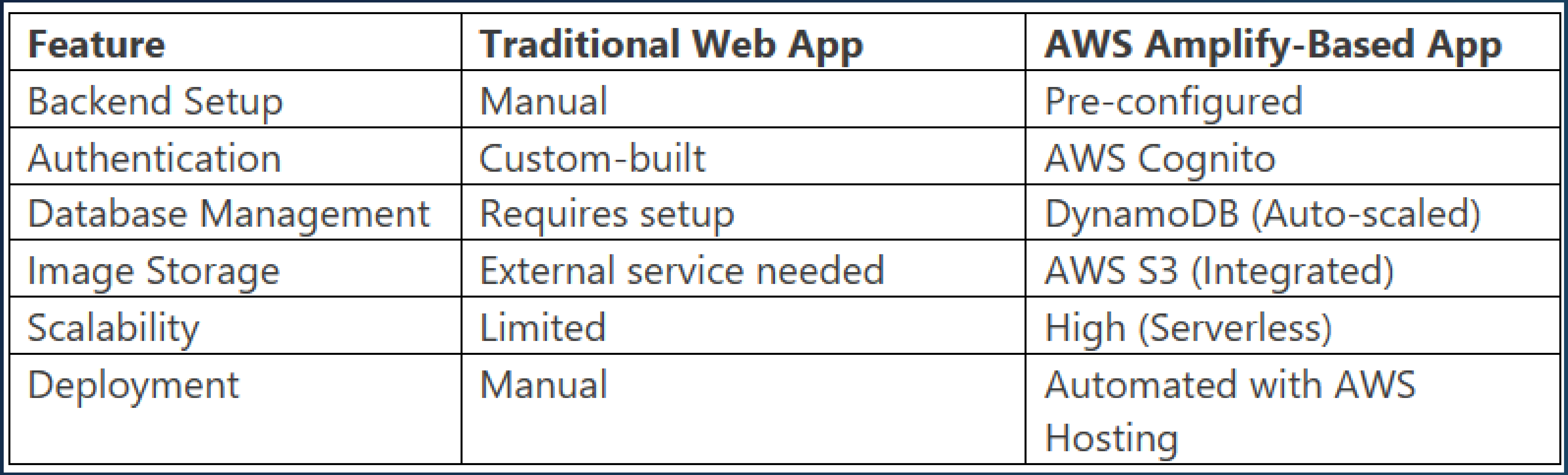
View, edit, and create users in your user pool. Users that are enabled and confirmed can sign in to your user pool.

User name	Email address	Email verified	Confirmation status	Status
aachal	dhanashreegiriya2...	Yes	Confirmed	Enabled
dhanashree	coordinator01080...	Yes	Confirmed	Enabled
dhanashree-giriya	dhanashreegiriya2...	Yes	Confirmed	Enabled
ayushi	ayushinagpure9@...	Yes	Confirmed	Enabled
pradnya	pradnya.borkar@s...	Yes	Confirmed	Enabled

ANALYSIS

- **Scalability** : Serverless architecture allows auto-scaling.
- **Security** : AWS Cognito and IAM policies ensure secure access.
- **Cost Efficiency** : Pay-as-you-go model reduces operational costs.
- **User Experience** : React-based UI provides a smooth experience.

COMPARISON WITH TRADITIONAL WEB APPS



Feature	Traditional Web App	AWS Amplify-Based App
Backend Setup	Manual	Pre-configured
Authentication	Custom-built	AWS Cognito
Database Management	Requires setup	DynamoDB (Auto-scaled)
Image Storage	External service needed	AWS S3 (Integrated)
Scalability	Limited	High (Serverless)
Deployment	Manual	Automated with AWS Hosting

CONCLUSION

Key Takeaways :

- Serverless architecture reduces infrastructure management.
- Cloud-native solutions enhance scalability, security, and cost-efficiency. Successfully built a full-stack travel diary application using AWS Amplify and React.js.
- Demonstrated the effectiveness of cloud-native, serverless architecture in modern web development.

Future Work :

- **Offline Functionality:**
  Allowing users to add and store travel entries without an internet connection.
- **Location Tagging:**
  Automatically tagging travel entries with location data for better trip reporting.
- **Social Media Integration:**
  Enabling users to share their travel experiences directly from the app.
- **AI-Based Recommendations:**
  Using AI to suggest travel destinations based on user preferences.
- **Mobile Compatibility:**
  Developing a mobile version using React Native for broader accessibility.
- **Collaboration Features:**
  Allowing multiple users to contribute to a shared travel diary.

THANK YOU