

Assignment 3: Android App with AWS Cloud Integration

Total Points: 100 (+5 Extra Credit)

Due Date: Tuesday, May 20th, 11:59 PM

Note: I will take the top 2 of the three assignments. So, this assignment is optional

Objective

Build a simple Android app in **Java** that lets users register and log in using **AWS Cognito**, submit entries to a **custom API** built using **API Gateway + Lambda**, and store/retrieve those entries from **AWS DynamoDB**.

App Concept: *Daily Mood Logger*

Users log in to the app and record their mood once per day. They can view their previous mood logs in a list.

Requirements

1. User Authentication (20 pts)

- Use **AWS Cognito User Pools** for user registration and login.
- Show proper error messages on login failure or duplicate sign-up.
- Maintain the login session.

2. Mood Logging UI (15 pts)

- After login, show a simple form with:
 - Date (auto-filled)
 - Mood (dropdown: Happy, Sad, Angry, Anxious, Neutral)
 - Notes (optional)
- Button to **submit** the mood log.

3. Backend API with API Gateway + Lambda (30 pts)

- Create a **REST API** using **API Gateway** with:
 - POST /mood – saves the user's mood to DynamoDB
 - GET /moods?user=<user_id> – retrieves that user's previous mood logs
- Backed by **Lambda functions in JavaScript or Python**

- Secure with **API key** or **IAM role**

4. DynamoDB Storage (15 pts)

- Store mood logs in a DynamoDB table with fields:
 - user_id (Partition Key)
 - timestamp (Sort Key)
 - mood
 - notes
- Set up proper IAM permissions for Lambda.

5. Fetching and Displaying Mood Logs (15 pts)

- Fetch user's mood history using the GET API.
- Show logs in a **RecyclerView** in reverse chronological order.

6. Code and Project Structure (5 pts)

- Use Java in Android Studio
- Maintain clean, commented code
- Organize code into activities/fragments and helper classes

Bonus (+5 pts Extra Credit)

Push Notification Reminder using AWS SNS

- Set up **AWS SNS** to send a daily push notification at 7 PM reminding the user to log their mood.
- Use Firebase Cloud Messaging (FCM) to receive notification on the Android app.

Deliverables

1. Source code
2. A short README with:
 - Setup instructions
 - AWS services used
 - Screenshots of working app

3. Create a ZIP file for all these documentation and upload it to the Black Board site.

Grading Rubric

Feature	Points
Cognito authentication	20
Mood logging UI	15
API + Lambda integration	30
DynamoDB storage	15
Mood history view	15
Code quality and organization	5

Extra Credit: SNS push notification +5