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Submitted to: Professor Jameel

Subject: Android Development

Semester Project

Topic: TasksAppRestAPIMySQL

**TasksAppRestAPIMySQL App Documentation**

**Overview**

TasksAppRestAPIMySQL is an Android application that allows users to manage tasks using a REST API with a MySQL database. The app provides functionality for creating, reading, updating, and deleting tasks. It integrates with a remote server hosting the REST API, which handles the data storage and retrieval operations.

**Features**

The TasksAppRestAPIMySQL app includes the following features:

1. **Create Task**: Users can create new tasks by providing a task name, description, and due date. The app sends a POST request to the REST API endpoint to insert the task data into the MySQL database.
2. **Get Tasks**: Users can retrieve all tasks from the database by sending a GET request to the REST API endpoint. The app receives the task data as a response and displays it in a RecyclerView, allowing users to view the list of tasks.
3. **Update Task**: Users can update the details of a specific task by providing the task ID and the updated task information. The app sends a PUT request to the REST API endpoint, updating the corresponding task in the MySQL database.
4. **Delete Task**: Users can delete a specific task by providing the task ID. The app sends a DELETE request to the REST API endpoint, removing the task from the MySQL database.

**Technologies Used**

The TasksAppRestAPIMySQL app utilizes the following technologies and frameworks:

* Android Studio: The development environment for building the Android app.
* Java: The programming language used for the Android app development.
* Retrofit: A type-safe HTTP client library used for making API requests and handling responses.
* Gson: A Java library used for converting JSON data to Java objects and vice versa.
* RecyclerView: An Android UI component used for displaying a scrollable list of items efficiently.
* REST API: A web service that provides the endpoints for creating, reading, updating, and deleting tasks.
* MySQL Database: A relational database used for storing and retrieving task data.

**Usage Guide**

Upon launching the TasksAppRestAPIMySQL app, users will see a user-friendly interface with the following components:

* EditText fields for entering task details (task name, description, due date).
* Buttons for performing actions: "Add Task," "Get Tasks," "Update Task," and "Delete Task."
* A RecyclerView for displaying the list of tasks retrieved from the API.

To use the app, users can follow these steps:

1. **Add a Task**: Enter the task details in the corresponding EditText fields (task name, description, due date). Click the "Add Task" button to create the task. A success message will be displayed upon successful task creation.
2. **Get Tasks**: Click the "Get Tasks" button to retrieve all tasks from the database. The list of tasks will be displayed in the RecyclerView.
3. **Update a Task**: To update a task, enter the task ID of the task to be updated, along with the updated task details (task name, description, due date). Click the "Update Task" button to send the update request to the API. A success message will be displayed upon successful task update.
4. **Delete a Task**: To delete a task, enter the task ID of the task to be deleted. Click the "Delete Task" button to send the delete request to the API. A success message will be displayed upon successful task deletion.

**Error Handling**

The TasksAppRestAPIMySQL app includes error handling to provide feedback to the user in case of any issues. Error messages are displayed as Toast messages and logged in the Android Logcat console.

Common error scenarios include:

* Network connectivity issues: Users will be notified of any network-related errors when communicating with the API.
* Failed API requests: If an API request fails (e.g., creating a task, updating a task), users will receive an appropriate error message.

**Conclusion**

The TasksAppRestAPIMySQL app provides a convenient way for users to manage tasks using a REST API with a MySQL database. With its intuitive user interface and essential features for task management, it offers a streamlined experience for users to create, read, update, and delete tasks seamless

**Code**

Complete code can be found on my [GitHub](https://github.com/MatrixUsman/BSITM2/tree/main/Semester%206/Android%20Devlopment/Semester%20Project/TasksAppRestAPIMySQL/TasksAppRestAPIMySQL).

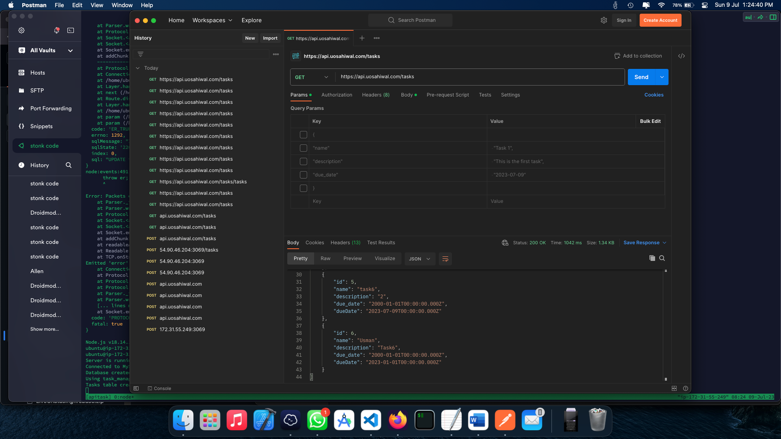
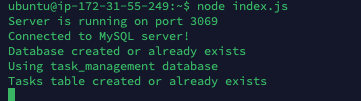
[RESTAPI code](https://github.com/MatrixUsman/BSITM2/tree/main/Semester%206/Android%20Devlopment/Semester%20Project/TasksAppRestAPIMySQL/RESTAPI/task-management-api)

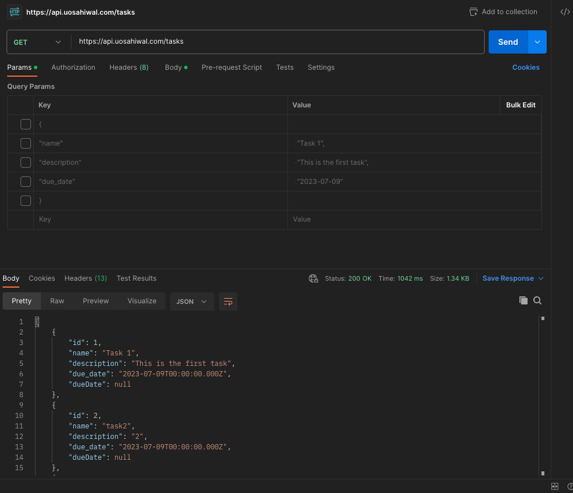
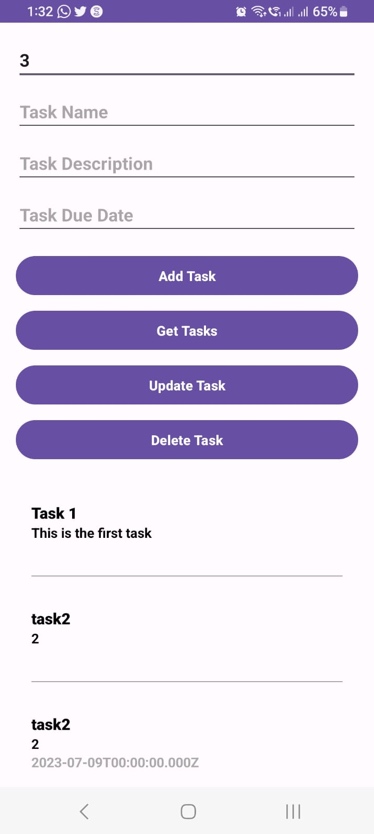
Link to [APK](https://github.com/MatrixUsman/BSITM2/blob/main/Semester%206/Android%20Devlopment/Semester%20Project/TasksAppRestAPIMySQL/TasksAppRestAPIMySQL.apk)

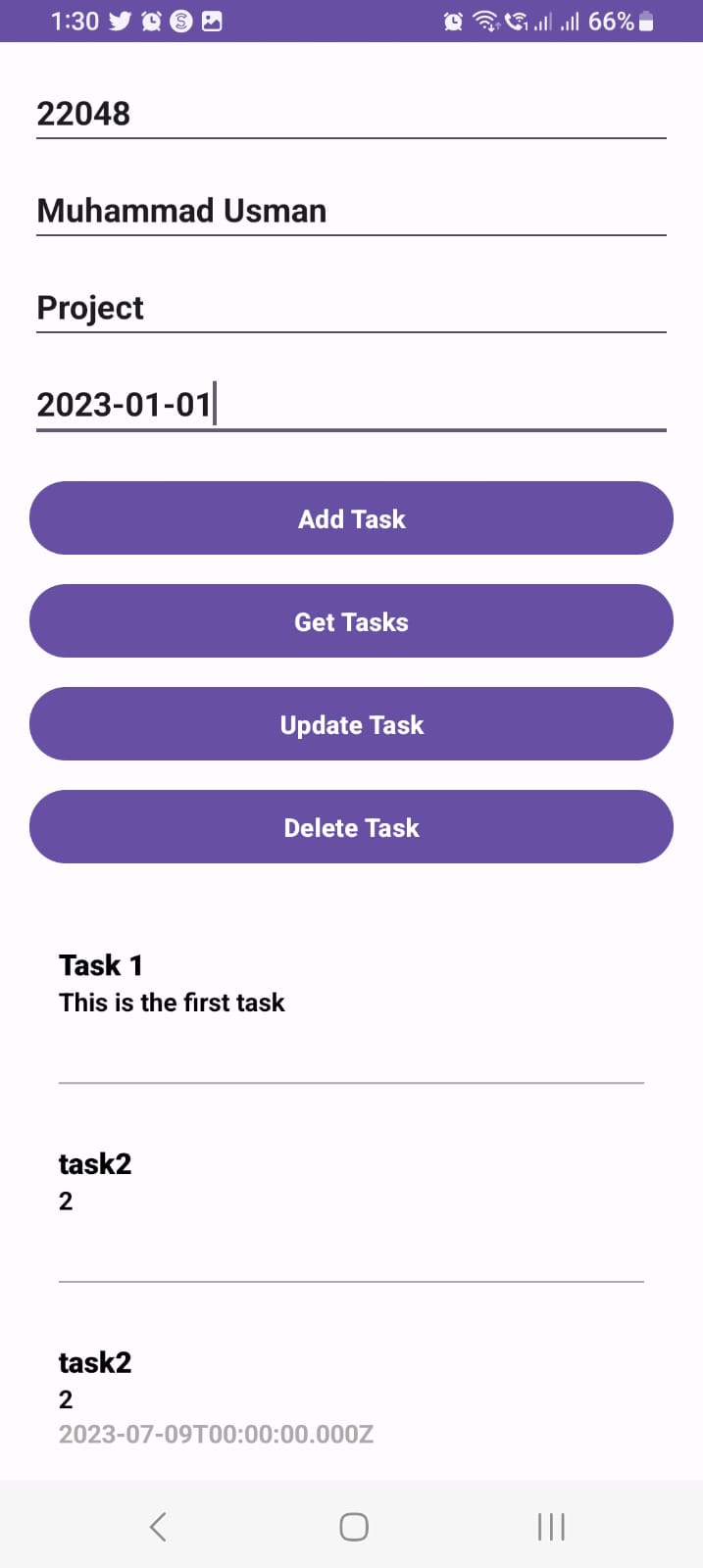
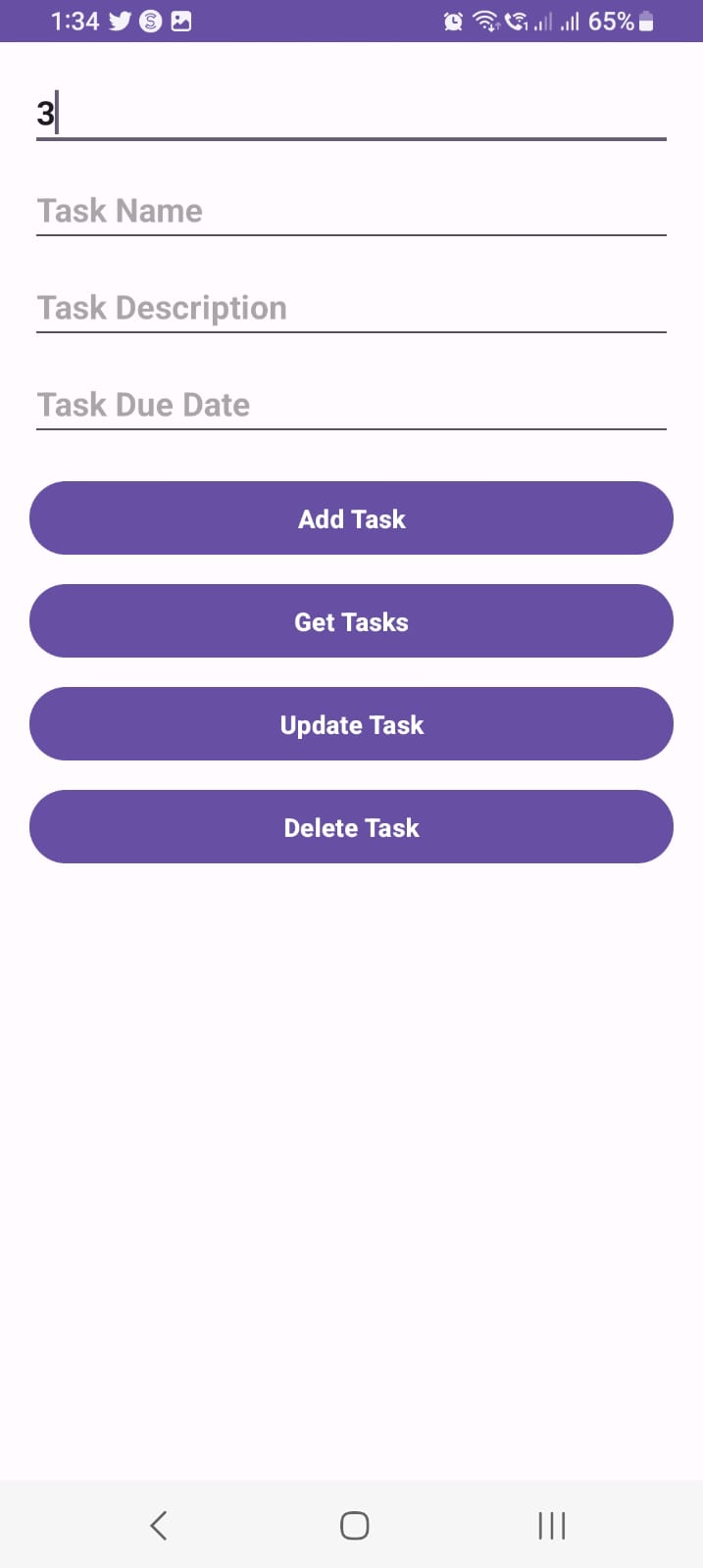
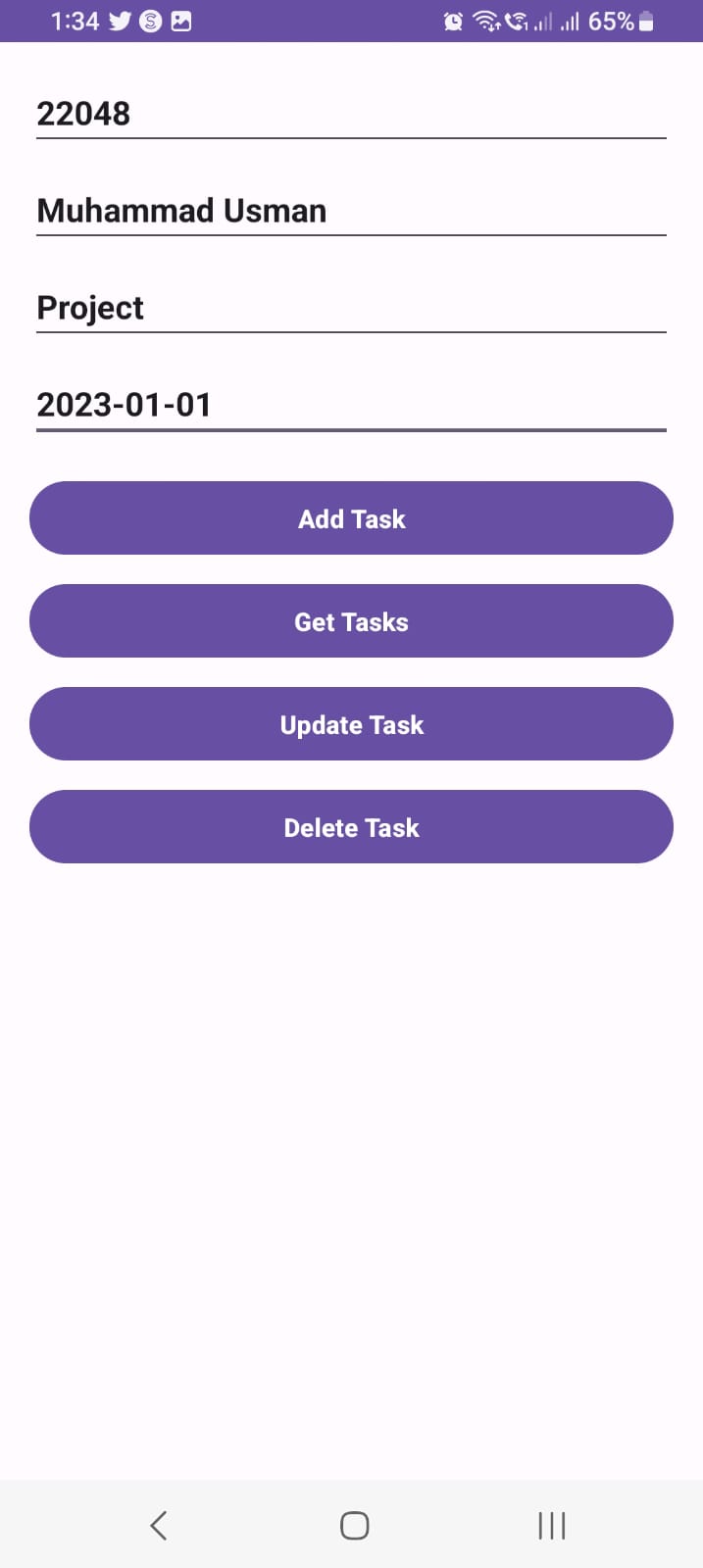
[Compressed Code zip](https://github.com/MatrixUsman/BSITM2/blob/main/Semester%206/Android%20Devlopment/Semester%20Project/TasksAppRestAPIMySQL/Tasks%20App%20RestAPI%20MySQL.zip)

[Media](https://github.com/MatrixUsman/BSITM2/tree/main/Semester%206/Android%20Devlopment/Semester%20Project/TasksAppRestAPIMySQL/Media)

**Screenshots**

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