Project Report Template

Mobile App Development

1. Project Title

App Name: Ostaad
Team Members:
Muhammad Bilal, 251687216 | Muhammad Hassaan Bari, 261934233
Course: Mobile App Development | Instructor: Mam Umber Nisar
Date: 1st Dec 2025

2. Overview

Objective:

- Develop a Flutter app for Android.
- Integrate APIs for quizzes and user authentication.
- Implement subject-specific AI assistance for CS and Math.
- Enable offline access to notes and history.
- Create a community tab for note-sharing and help requests.
- Design an aesthetic, intuitive UI with dark mode.
- Ensure secure data handling and user authentication

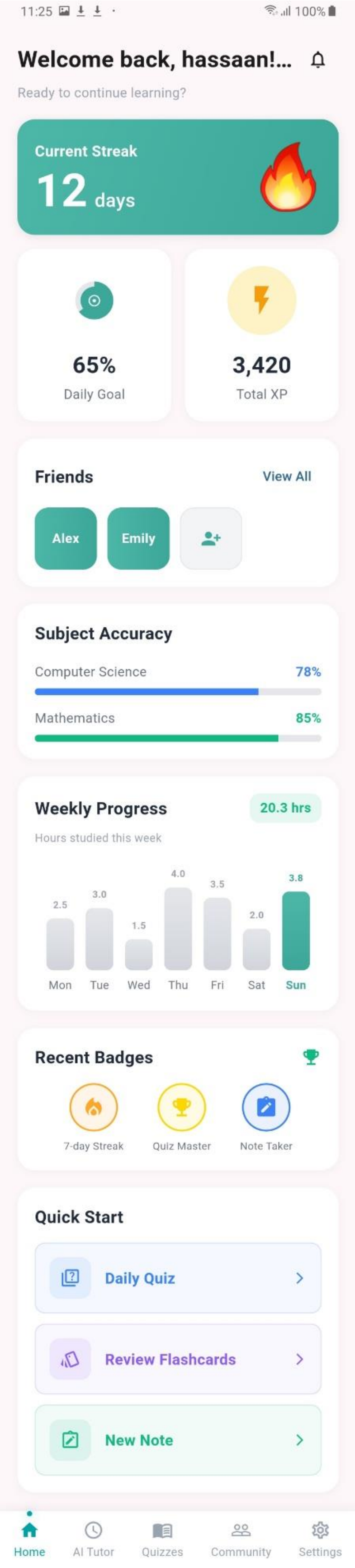
Platform(s): Flutter
Tools: Android Studio, EmailJS , Firebase, Groq.console (for api)

3. Features

Feature	Description	Status
Home Tab		

Feature	Description	Status
User Login with Firebase	Login using email and password via Firebase Authentication.	Completed
Email PIN Verification (OTP)	After login, a 6-digit PIN is generated, stored in Firestore, and emailed via EmailJS for verification.	Completed
PIN Expiry & Validation	PIN stored with timestamp; expires after a short window (e.g., 15 minutes). On success it is deleted.	Completed
AI Chatbot Tutor	Chat screen that connects to an AI model (Hugging Face / LLM API) and answers study questions.	Completed
Progress Dashboard (Home)	Home screen showing streak, XP, goals, and basic stats like subject accuracy.	Completed
Secure Firestore Data Model	Separate `users` and `pins` collections; only the owner can read/write their PIN doc.	Completed
Resend / Error Feedback	Snackbar messages for failed logins, failed email sending, or invalid/expired PIN.	Completed / improving
Theming & Basic Navigation	Simple navigation between Login, Home, Chatbot, and PIN verification screens.	Completed
Ai Quiz Generation	Randomly Generates Quiz based on the Pdf/notes you uplaod	Completed
Flashcards	With the help of Ai you will be updated with daily flashcards respective of course for daily prep.	Completed
Camera	Camera Integrated App, so the user can capture/upload notes.	Completed
Community Tabs	Helps you to discover new users based on your Institute and other Institute, so the user can interact and look for their progress and stats.	Currently under progress
Enabled Dark Mode	Multi mode UI for an interactive App design	Completed
Database Storage	User Progress will be stored in Firebase so the user can easily Backtrack his progress.	Half done
Enabled Offline mode	User can view the app even without the Internet.	Completed
Secured	Secured and Notification Enabled app , user data is encrypted and protected.	Completed

4. Screenshots/UI



11:25 100%

Welcome back, hassaan!...

Ready to continue learning?

Current Streak
12 days

65%
Daily Goal

3,420
Total XP

Friends View All

Alex Emily

Subject Accuracy

Computer Science 78%

Mathematics 85%

Weekly Progress 20.3 hrs

Hours studied this week

Mon	Tue	Wed	Thu	Fri	Sat	Sun
2.5	3.0	1.5	4.0	3.5	2.0	3.8

Recent Badges

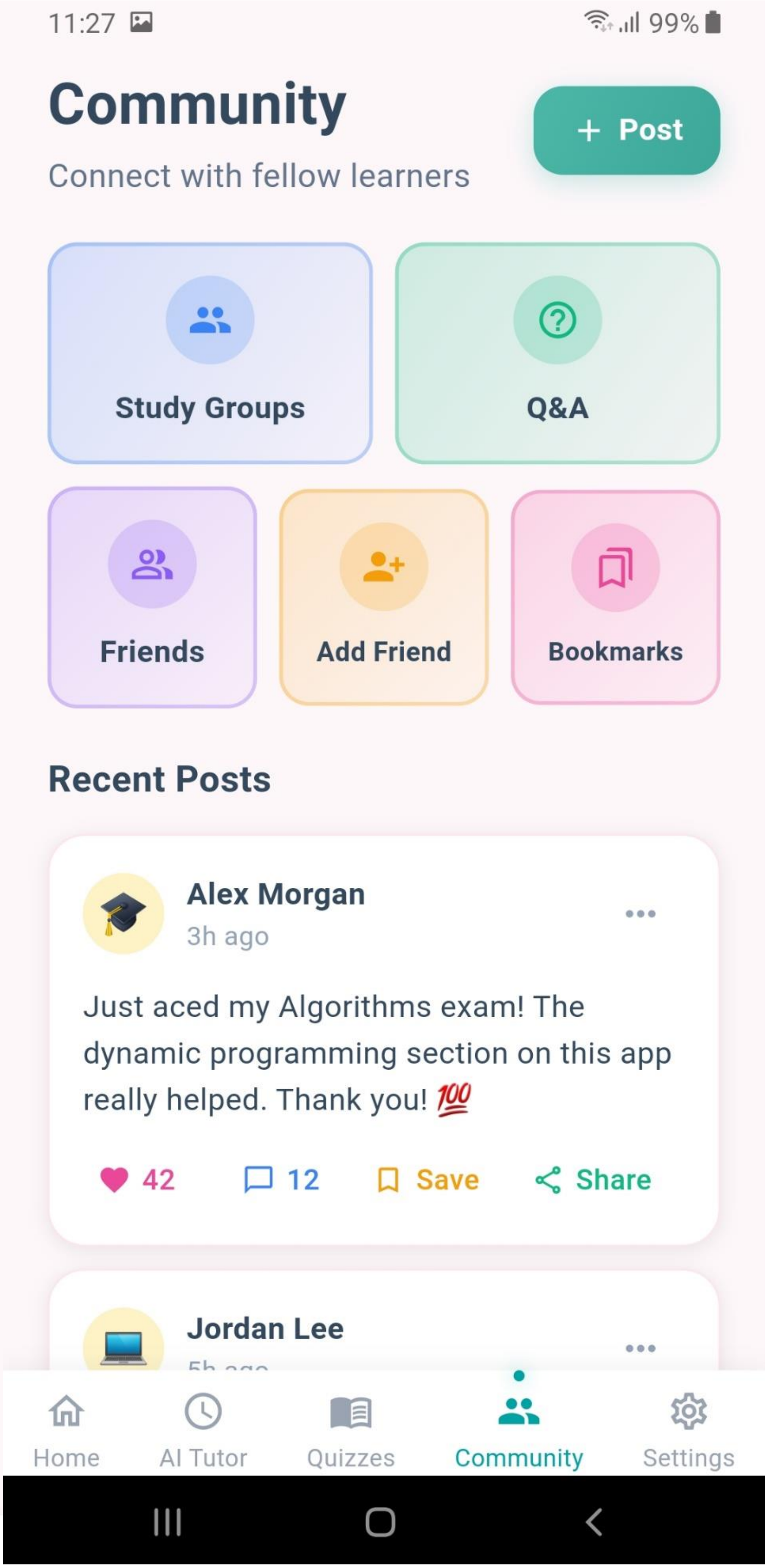
7-day Streak · Quiz Master · Note Taker

Quick Start

Daily Quiz >

Review Flashcards >

New Note >



11:27 99%

Community

+ Post

Connect with fellow learners

Study Groups

Q&A

Friends

Add Friend

Bookmarks

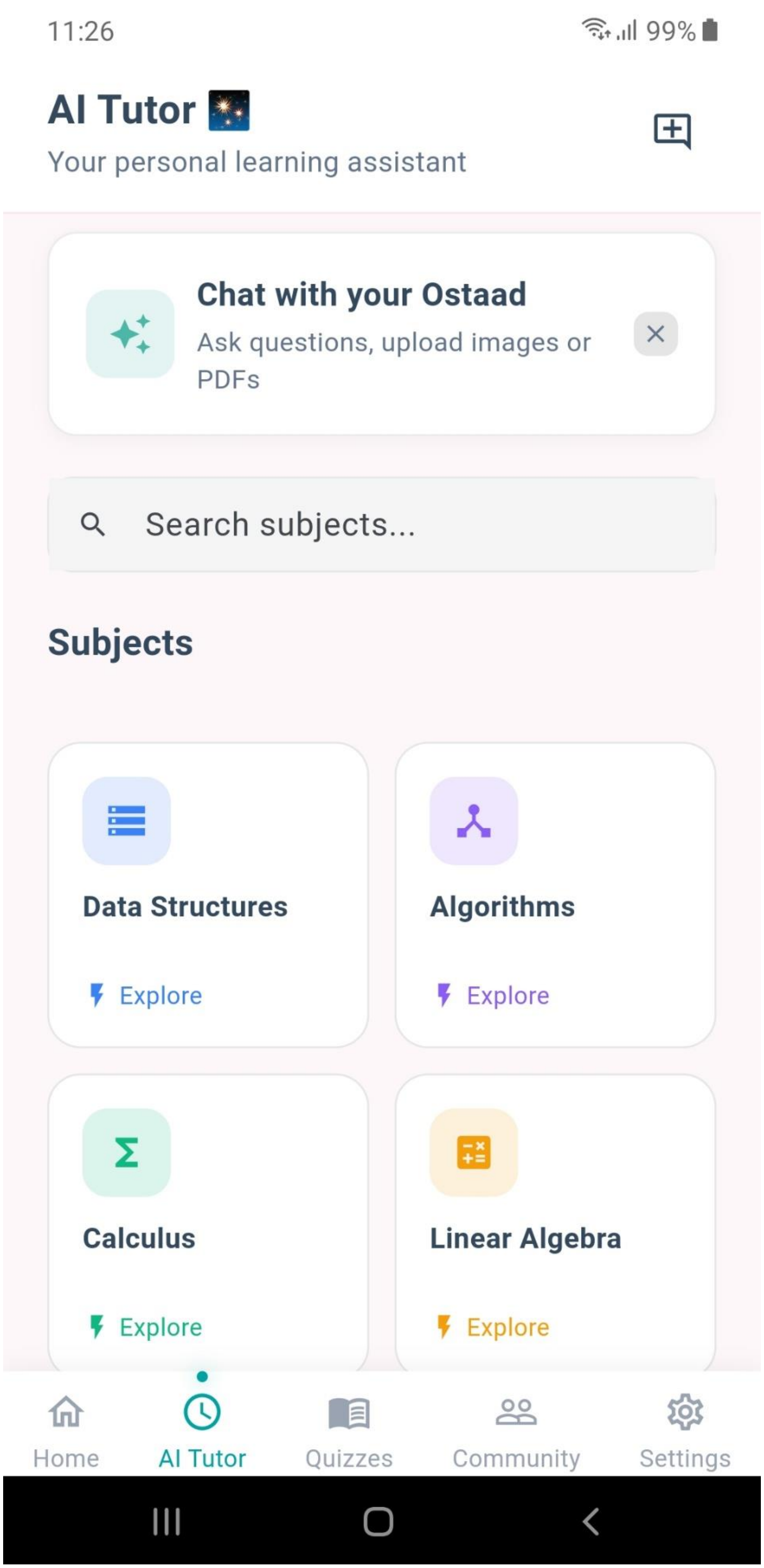
Recent Posts

Alex Morgan
3h ago

Just aced my Algorithms exam! The dynamic programming section on this app really helped. Thank you! 💯

♥ 42 · 12 · Save · Share

Jordan Lee
5h ago



AI Tutor 🎆

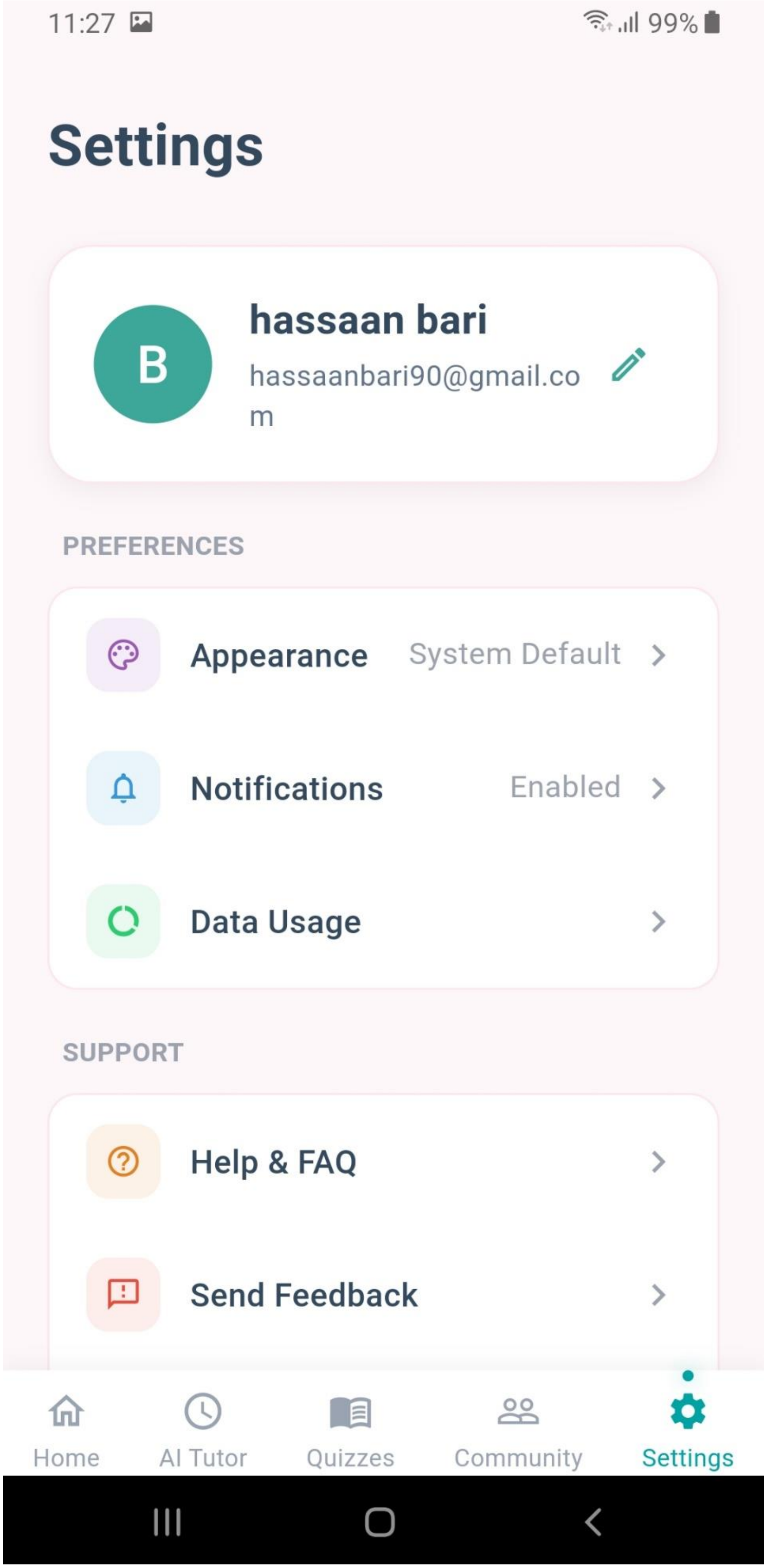
Your personal learning assistant

Chat with your Ostaad

Ask questions, upload images or PDFs

Search subjects...

Subjects



Settings

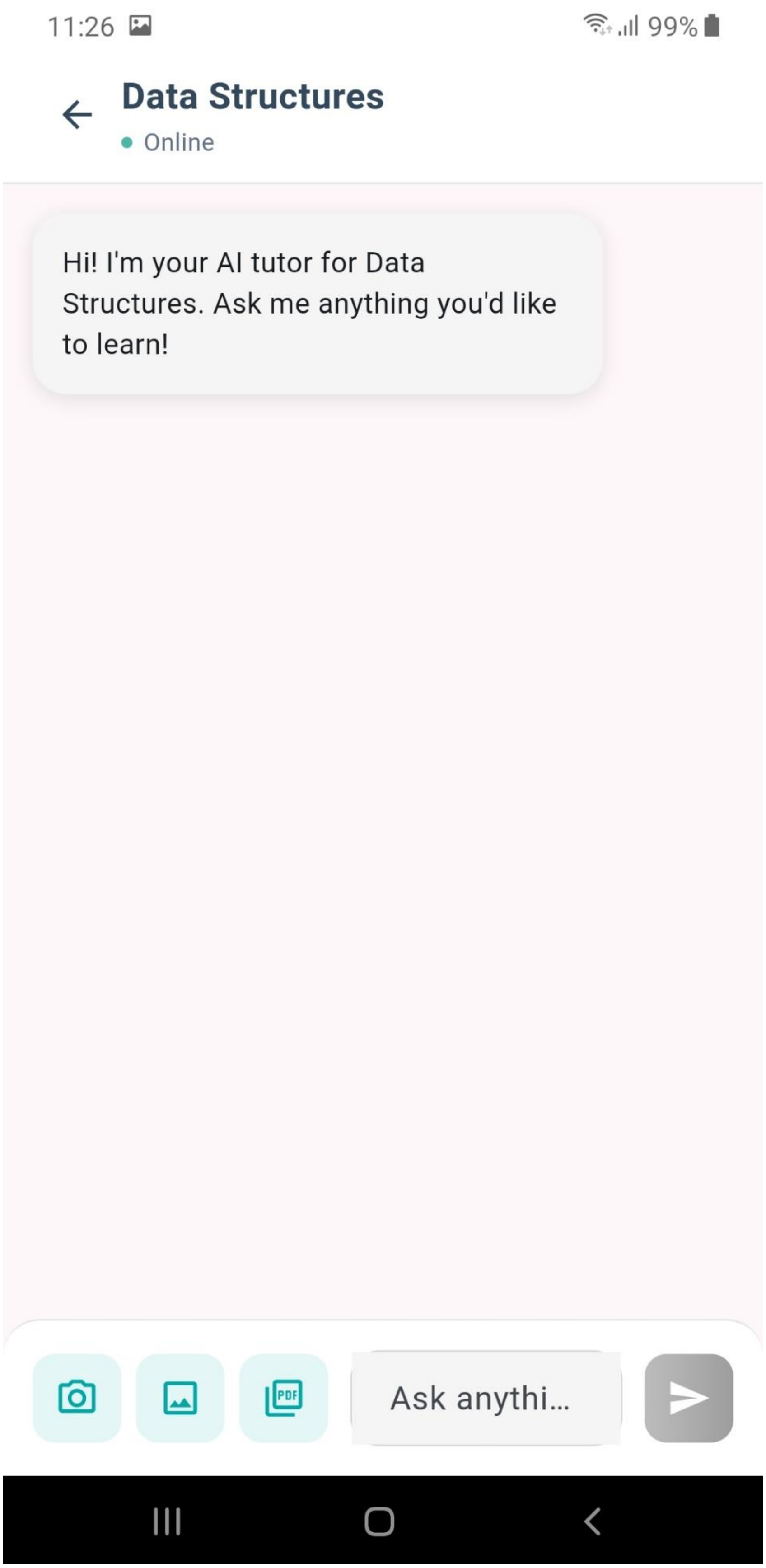
hassaan bari

hassaanbari90@gmail.com

PREFERENCES

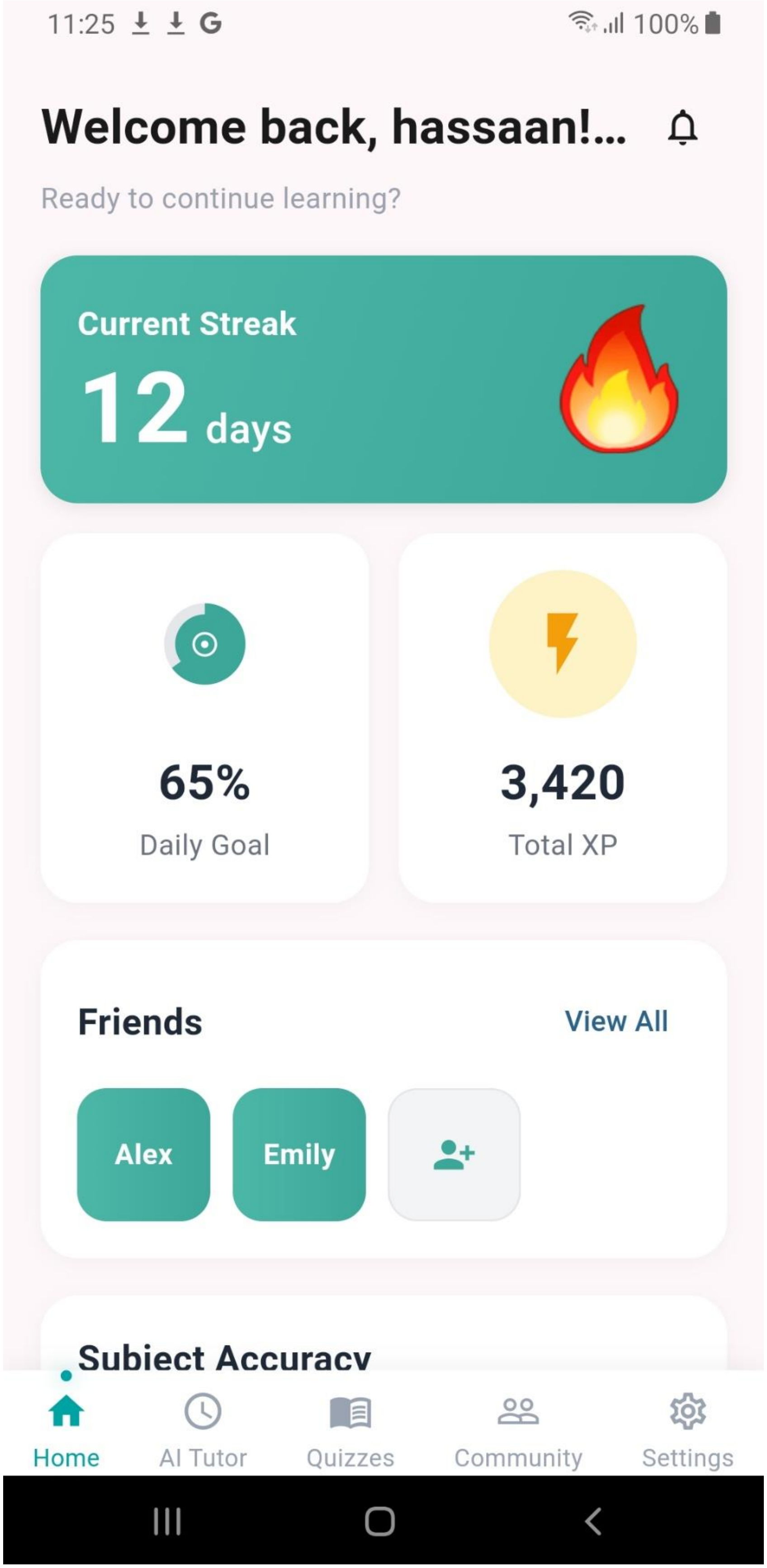
Appearance: System Default

Notifications: Enabled



Data Structures

Hi! I'm your AI tutor for Data Structures. Ask me anything you'd like to learn!



Welcome back, hassaan!...

Ready to continue learning?

Current Streak

12 days

65%

Daily Goal

3,420

Total XP

Friends

View All

Subiect Accuracv

5. Tech Stack

Frontend:

Flutter/Dart , Figma , Vs Code.**Backend:**

- Firebase Authentication (email/password)
- Cloud Firestore (users, PINs, and other app data)

APIs / Integrations:

- EmailJS REST API for sending OTP/PIN emails
- Hugging Face / LLM HTTP API for AI chatbot responses
- Open AI API , Groq API (For Quiz and FlashCards Generation)

6. Challenges & Solutions

Issue 1 – Secret keys committed to GitHub (push blocked):

- *Problem:* Accidentally committed Hugging Face and EmailJS keys; GitHub push protection rejected the push.
- *Solution:* Rotated all leaked tokens, moved them into secrets.dart (ignored via .gitignore), and rewrote local Git history before pushing again.

Issue 2 – EmailJS 422 "recipient address is empty":

- *Problem:* EmailJS returned status 422 because the template_params keys in Flutter (to_email, message) did not match template variables ({{user_email}}, {{passcode}}, {{time}}).
- *Solution:* Updated the Flutter request to send user_email, passcode, and time so they match the EmailJS template fields exactly.

Issue 3 – Integrating Email PIN flow with Firebase login:

- *Problem:* Needed a clean flow from Firebase sign-in → generate PIN → store in Firestore → send email → verify.
- *Solution:* Implemented a LoginScreen and PinVerifyScreen. After successful Firebase sign-in, the app writes a pins/{uid} document, calls EmailJS, then navigates to the PIN screen which reads and validates the stored PIN with expiry.

Issue 4 – LLM integration & HTTP errors:

- *Problem:* Initially used OpenAI-style body and endpoint for Hugging Face, causing HTTP 410 and HTML error pages in the chat.
- *Solution:* Switched to the correct Hugging Face router endpoint and request format, and improved error handling/snackbars in the chat screen.

Issue 5 –API Issue:

- *Problem:* We were having quiz generation issue due to using free API's as they had low/limited Functionality due to token Limitations.
- *Solution:* We switched to the paid version.

7. Learning Outcomes

- Practiced **Flutter UI** development and state handling for multiple screens (Login, Home, Chat, PIN Verify).
- Integrated **Firebase Authentication** and **Cloud Firestore** for secure user management.
- Learned to use **EmailJS** with dynamic template variables and REST API calls from Flutter.
- Gained experience handling **HTTP errors, secrets management, and GitHub push protection**.
- Applied version control workflows (commit, pull, push, conflict resolution) in a team setting.
- How to Implement and use API calls for future Projects.

8. Future Work

- Add full AI-powered quiz and recommendation system per subject.
- Implement proper state management (e.g., Provider/Bloc) for cleaner architecture.
- Add push notifications for streak reminders and new study sessions.
- Build a small admin panel (web or mobile) to manage users and view high-level analytics.

- Move EmailJS/LLM calls to a backend (Cloud Functions) to avoid exposing API keys in the app.
- Remember Chat history and User activities
- Adding Added features such as cross-app sharing so the user can share their progress/work to other apps

9. Links

GitHub Repo: https://github.com/Barii1/my-project.git

10. Conclusion

Summary: Taskify manages tasks with reminders. Tested on [device/OS].
Team Contribution:
Member 1: UI, Firebase.
Member 2: Logic, CRUD.
Member 3: Notifications.

10. Conclusion

The project delivers a working **Flutter learning app** with:

- Firebase email/password login,
- Email-based PIN verification using EmailJS, and
- An AI chatbot integrated via Open Ai and Groq API, Hugging Face / LLM API,

all tied into a simple dashboard that shows streak and progress. It has been tested on an Android emulator/physical device and demonstrates secure onboarding, real-time Firestore integration, and external API usage.

Team Contribution (if solo, adjust wording):

- Muhammad Hassaan Bari: Designed UI, implemented Firebase Auth & Firestore, integrated EmailJS PIN flow, added AI chatbot and handled Git/GitHub setup. Designed Figma Screens.
- Muhammad Bilal : Designed UI, implemented Firebase Auth & Firestore, integrated EmailJS PIN flow, added AI chatbot and handled Git/GitHub setup. Designed Figma Screens.

11. Declaration

We confirm this is our original work.
Signatures: Muhammad Bilal, Muhammad Hassaan Bari
Date: 1st Dec 2025