

Mobile and Embedded Computing

Laboratory 0. Orientation

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You can contact me on:

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- Teams

Senior Engineer @ Dell [Kotlin, Spring Boot]

45+ Launched apps on Google Play & App Store [Flutter, Java]

Speaker at DevTalks 2025 – Scaling Flutter to 100k MAU as a solo dev

Grading – 4P

Hands-on Flutter exercises

4 Milestones:

1. Build basic UI with mocked data (0.5p)
2. Integrate Firebase (0.5p)
3. State management & Offline first (1p)
4. Final presentation (2p)

These milestones may be solved individually or in a team of maximum 3 persons. Each contributor will be graded individually, based on their input to the developed application.

Milestones presentation schedule

1. Build basic UI with mocked data (0.5p) – 23 October 2025
2. Integrate with Firebase (0.5p) – 20 November 2025
3. State management & Offline first (1p) – 11 December 2025
4. Final presentation (2p) – 15 January 2026

Project topics – Project 1

TaskFlow: A Team Task Management App

- Users can register/login with Firebase Auth (Email).
- Create teams, add members, assign tasks with deadlines.
- Real-time sync of tasks via Firestore.
- Implement offline-first behavior with async/local caching.
- Different roles (admin & member)

Project topics – Project 2

MediTrack: Personal Health & Medication Reminder

- Users log in and store health records securely.
- Set medication schedules → trigger local notifications.
- Camera/Storage permissions for uploading prescriptions.
- Secure data with Firebase App Check & Firestore rules.
- Routing between dashboard, reminders, health logs.

Project topics – Project 3

EduNotes: Collaborative Learning & Note Sharing

- Students sign up via Email.
- Create, edit, and share notes with peers in real-time.
- Support text + images (upload to Firebase Storage).
- Notes can be starred, tagged, and filtered.
- Use BLoC to separate UI (note editors) from logic (saving/sync).

Project topics – Project 4

TravelBuddy: Smart Itinerary & Expense Tracker

- Create trips → add activities, bookings, and expenses.
- Async fetch of currency conversion rates (mock external API).
- Store user trips & expenses in Firestore.
- Routing between trip overview, detailed day views, and analytics.
- Optimize for low energy consumption (lazy loading data, efficient list rendering).

Project topics – Project 5

EventMate: Social Event Planning & RSVP App

- Users sign up via Firebase Auth (email).
- Create and manage events (title, date, location, description).
- Invite friends (via email lookup or app sharing).
- RSVP tracking with real-time updates in Firestore.
- Calendar/contacts permission integration (optional).
- BLoC to separate business logic from UI for event creation and RSVP flow.

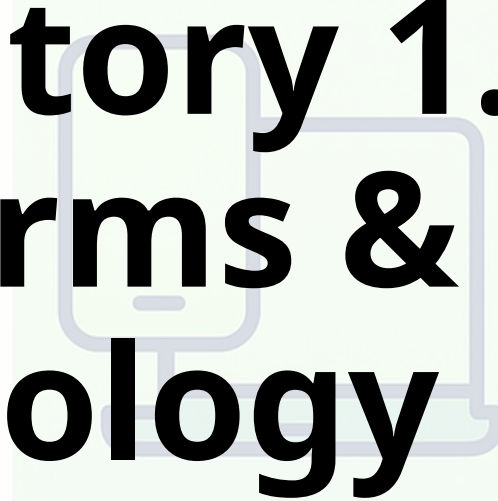
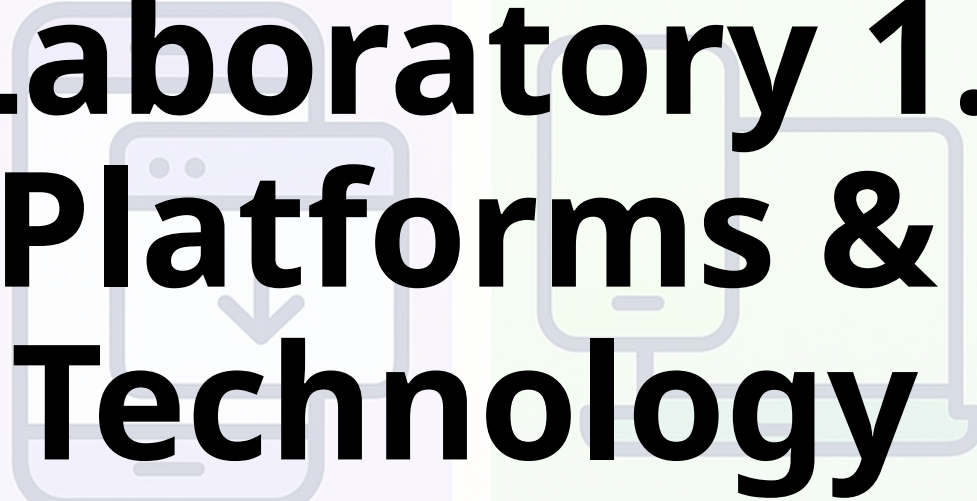
Project topics – Project 6

FitTrack: Offline-Capable Fitness Logger with Analytics

- Users log daily workouts (exercise type, duration, calories burned).
- Offline-first design: store logs locally, sync with Firebase when online.
- Visualize progress with charts (steps, calories, workouts).
- Background async processing (e.g., aggregating weekly stats).
- Optimize list rendering and data sync to reduce energy consumption.
- Authentication with Firebase, secure storage for sensitive health data.

- Project development MUST be **tracked on GitHub**
- The application MUST be **written in Flutter**
- The way of working will also be marked (Pull Requests, Branches, Code reviews, GitHub Issues, etc.)
- Individual participation will be measured based on Commits, Lines of Code, and the quality of the code written. **Each team member** should know **in detail what he has implemented** and have at least a brief awareness of the other parts of the project
- The readme MUST contain the following sections (in this order):
 - **Team composition**, 1 person / row (Name, Surname, Group)
 - **Project description** (brief) of the implemented app (what it does, what 'screens' it has, etc.)
 - **Other information** (anything else you would like to mention)
- The final presentation will be a live demo accompanied by slides and must not take more than 15 minutes / team. Questions will be asked based on the code; you should NOT copy entire projects from the internet, and you should not vibe code stuff that you can't explain later.

Laboratory 1. Platforms & Technology



Tasks

- Set-up Flutter and your development environment
 - You should install Flutter by following the documentation (<https://docs.flutter.dev/install>) (Click on Install Manually in the Install Flutter section)
 - You will need Android Studio / Xcode
 - You will need IntelliJ to write the code (with the Flutter and Dart plugins)
- Validate development environment by creating and running the default Flutter project
- Organize in teams of maximum 3 for completing the milestones