

ITCS 444: MOBILE APPLICATION DEVELOPMENT

COURSE PROJECT

First Semester 2025-2026

BASIC REQUIREMENTS:

You should form groups of up to **4-5 students**.

PROJECT TITLE:

Development of a Mobile App for Care Center

PROJECT MAIN GOAL:

Use Flutter Mobile App Development tools and techniques to create a Mobile-application. How can you design and build a secure and user-friendly app designed to facilitate the rental, donation, and exchange of essential mobility and medical equipment for the elderly and people with disabilities. The app serves as a centralized, trusted source that connects individuals and organizations who have equipment's (e.g., wheelchairs, walkers, hospital beds, oxygen machines) with those in urgent need of temporary or permanent use. By promoting reuse, reduces the financial burden on users and minimizes waste, fostering a strong community support network.

PROJECT Domain:

The goal of this project is to design and build a mobile application, user-friendly mobile app (using Flutter + Dart) that allows Care Societies and users to manage rental and donation processes for assistive equipment (e.g., wheelchairs, crutches, walkers).

The app should allow administrators to add, categorize, and manage both **rental requests** and **donated items**, while users can easily browse available equipment, reserve items, or submit donation offers using their mobile devices.

The focus will be on developing key functionalities such as real-time inventory management, reservations, return date tracking, automatic reminders, donation tracking, donor contributions, follow-up notifications and usage reports.

1. Functional Requirements (must-implement):

1. User Authentication and Role Management:

- Develop a secure login system with role-based access control (administrator/customer).
- Roles: Admin (Donor) , Renter, and Guest (browse only).
- Profile page (name, contact, ID, preferred contact method).

2. Inventory management

- Admin can add/edit/delete **equipment**: id, name, type, description, images, condition, quantity, location, tags, availability Status, rental Price Per Day (optional).

- Set the status of each item (available, rented, donated, under maintenance).
- Browse/search/filter equipment by type, availability. Allow toggling between different views.

3. Equipment reservations & rentals

Provide an intuitive interface for users to browse available equipment and make rental requests.

- Renter can reserve equipment for specific date range or immediate pickup.
- Reservation flow: check availability → select dates → confirm → generate reservation record.
- Admin accepts/declines reservations.
- Rental lifecycle: Reserved → Checked Out → Returned → Maintenance (if needed).
- Allow the app to auto-calculate rental duration/dates based for example on item type or user type (trusted user, long term history). Allow the customer to change the estimated date duration within a specific range.
- Allow customer to track application progress.

4. Donor Page and Donation Management:

- Add a dedicated Donor Page for individuals or organizations who wish to donate assistive tools or equipment.
- Include a donation form where donors can specify the item type, condition, and select photos or icons.
- Allow administrators to review and approve donations before adding them to the inventory.

5. Tracking and Notifications System:

- Track the status and remaining duration of each rental (per item and per rental)
- Send automatic notifications to administrators and users when the return date is approaching or overdue.
- Notify administrators about new donation submissions and equipment requiring maintenance.
- Show current rentals and history for a user and for admin.

6. Reports and Statistics:

- Generate reports on most frequently rented and donated equipment.
- Provide administrators with usage analytics, overdue statistics, and maintenance records.
- Offer insights for improving inventory and service efficiency.

7. Search and Filtering:

- Allow users to search for equipment using different parameters such as type, status, or availability.
- Include filters for viewing only donated or rentable equipment.

Project Deadlines

Deadline	
Teams	5 November 2025 Fill team Names on MS Teams
Presentation	8 December 2025 Project Presentation Each group will present their work to me. Presentation time approx. 10 minutes. All group members must be present
Upload on blackboard	11 th December 2025 (upload <i>lib</i> folder & report on Blackboard)

ITCS 444 Project Submission

Each student must submit the following:

1. **Source Code:** Submit lib Folder, assets folder with pubspec.yaml file if needed, compressed on Blackboard
2. **Report:** Submit report **word/pdf** file on Blackboard (screenshots 10 – 20)
 - a. Submit your team names

No.	Student ID	Student Name
1.		
2.		
3.		

- b. Any required setup for app, if any. For example details of installed plugins.
- c. Only if needed, submit your **firebase account** (username and password).
- d. Students in Group must mention their assigned task/role in the project. Each task should mention only one name. If you want to add another student name to task (two names for a task) is allowed for maximum of two occurrences only. Students in one group will get the same project mark unless they have insufficient participation. **For Example:**

Task	Completed by Student
1. User Authentication	Ali
2. Home View	Mohamed
3. Car Registration	Fatema

- e. Attach Screen shots of project (one screen shot of each listed functionality).

Attach Screen shots here ↓

1	
2	
3	
4	

3. **Demo presentation** of your project during the specified days.

PROJECT EVALUATION

No.	Student ID	Student Name
1.		
2.		
3.		
4.		
5.		

OBJECTIVES	MARKS	Mark/Notes
1. User Authentication and Role Management: <ul style="list-style-type: none"> Develop a secure login system with role-based access control (administrator/User). 	1	
2. Add View <ul style="list-style-type: none"> Admin can add/edit/delete equipment: id, name, type, description, images, condition, quantity, location, tags, availability Status, rental Price Per Day (optional). Allow toggling between different views. 	2	
3. Equipment Reservation/Rental (For Users): <ul style="list-style-type: none"> Renter can reserve equipment for specific date range or immediate pickup. Reservation flow: check availability → select dates → confirm → generate reservation record. Admin accepts/declines reservations. Rental lifecycle: Reserved → Checked Out → Returned → Maintenance (if needed). Allow the app to auto-calculate rental duration/dates based for example on item type or user type (trusted user, long term history). Allow the customer to change the estimated date duration within a specific range. Allow customer to track application progress. 	4	
4. Donation Management (For Guests): <ul style="list-style-type: none"> Include a donation form where donors can specify the item type, condition, and select photos or icons. Allow administrators to review and approve donations before adding them to the inventory. 	3	

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5. Tracking <ul style="list-style-type: none">○ Track the status and remaining duration of each rental (per item and per rental)○ Send automatic notifications to administrators and users when the return date is approaching or overdue.○ Notify administrators about new donation submissions and equipment requiring maintenance.○ Show current rentals and history for a user and for admin.	2	
6. Reports and Statistics: <ul style="list-style-type: none">○ Generate reports on rented and donated equipment.○ Provide administrators with usage analytics, overdue statistics, and maintenance records.○ Offer insights for improving inventory and service efficiency.	1	
7. Search and Filtering: <ul style="list-style-type: none">○ Allow users to search for equipment using different parameters such as type, status, or availability.○ Include filters for viewing only donated or rentable equipment	1	
8. Notifications and overall system UI Design and process implementation <ul style="list-style-type: none">● Aesthetics in the Design● Visually pleasing UX design● Use animation to enhance the look and feel of app.● Extra Features	1	
Notes:		
Total Marks (15)	15	

Required objectives for groups of the