Tunku Abdul Rahman University of Management and Technology
BMIT2073 Mobile Application Development
Assignment
Academic Session: 202505

Group:
Group of 2 to 4 members

Weighting towards the assignment:
Total: 100% (This assignment contributes 50% to the final coursework marks)

Submission Deadline:
Prototyping Presentation : Week 6
Submission : Week 13
Final Presentation : Weeks 13 and 14

Learning Outcome Being Assessed:
CLO2: Apply mobile technologies and development methods to solve a given problem. (P4, PLO3)
CLO3: Present a mobile application to be published in a team. (A2, PLO4)

Scenario:
1. Company Background
Greenstem Business Software Sdn Bhd (https://www.greenstem.com.my/index.php) is a well-established and reputable commercial software development company based in Bandar Sri Damansara, Kuala Lumpur, Malaysia. Established in 1990, Greenstem specializes in delivering robust and scalable software solutions tailored specifically for the automotive industry. Their core product offerings include:

- **Workshop Management System (WMS):** A comprehensive desktop and web-based solution designed to streamline operations for automotive workshops, heavy machinery service centres, and general repair businesses. It covers vehicle management, job scheduling, service history, inventory control, invoicing, and customer relationship management (CRM).
- **Spare Parts Management System (SPMS):** An integrated solution that manages the entire lifecycle of spare parts inventory, including procurement, warehousing, sales, and tracking across multiple locations. It ensures optimal stock levels and reduces operational costs. This software is particularly well-suited for automotive workshops in Malaysia that are implementing a just-in-time (JIT) inventory management strategy, helping them minimize stock holding costs and improve efficiency.

Greenstem prides itself on developing highly functional and reliable software that significantly improves the efficiency and profitability of its clients.

2. The Current Challenge & Opportunity
While Greenstem's existing WMS and SPMS are highly effective for office-based staff and designated computer workstations, they face a growing demand for mobile accessibility. Workshop mechanics, part delivery personnel and inventory personnel are constantly on the move, either within the workshop, at a client's site, or in a warehouse. These critical personnel increasingly prefer mobile devices due to their portability, minimal footprint, and long battery life, which are essential for their dynamic work environments.

Currently, these critical personnel rely on printed work orders, manual checks, or have to repeatedly return to a desktop computer to:

- View details of their next job.
- Update job progress.
- Check the availability of a specific spare part.
- Request new parts for a job.
- Record notes or capture images related to a service.

This workflow often leads to:

- Delays in job completion due to inefficient information retrieval.
- Errors in manual data entry.
- Lack of real-time visibility for management.
- Mismatch of part orders, leading to a high number of return requests from clients.
- Frustration among technicians who need quick access to information.

Greenstem Business Software Sdn Bhd recognizes this as a significant opportunity to develop a mobile solution that empowers their clients' on-the-go workforce, enhancing productivity and service delivery.

3. Proposed Mobile Solution

Greenstem Business Software Sdn Bhd is commissioning the development of a new mobile solution to address the challenges faced by workshop mechanics, part delivery personnel, and inventory personnel.

The solution should be designed to run on both iOS and Android platforms and integrate seamlessly with their existing WMS and SPMS (though for this assignment, focus will be on the mobile solution's functionality).

Target Users:

1. **Workshop Manager:** Personnel responsible for managing a workshop.
2. **Workshop Mechanics:** Technicians working within an automotive workshop.
3. **Part Delivery Personnel:** Individuals who ensure parts ordered are delivered to workshop mechanics in a timely manner.
4. **Spare Parts Inventory Staff:** Personnel responsible for managing and issuing parts in a warehouse.
5. **WMS Customer:** Individuals who send their vehicle to a workshop for repair or maintenance.

Core Functionalities & Features:

Each team should select ONE from the following core functions:

A. Job Management for Workshop Manager:

- **Vehicle Details Management:** View and manage detailed information about customer vehicles, including make, model, year, **Vehicle Identification Number (VIN)**, and service history.
- **Work Scheduler:** Oversee and adjust the workshop's work schedule, assign jobs to mechanics, and monitor workload.
- **Customer Relationship Management (CRM):** Access customer profiles, communication history, and manage customer interactions.
- **Inventory Control:** Monitor overall spare parts inventory levels, track part usage, and initiate procurement requests.
- **Invoice Management:** Review, approve, and generate invoices, track payment statuses, and manage billing records.

B. Job Management for Workshop Mechanics:

- **Dashboard View:** A clear, intuitive display of assigned jobs/work orders for the day/week.
- **Job Details:** Access to comprehensive information for each job, including:
  - Customer details (name, contact, vehicle/equipment info).
  - Job description and requested services.
  - Assigned parts.
  - Service history of the vehicle/equipment.
- **Status Updates:** Ability to change job status (e.g., "Accepted," "In Progress," "On Hold," "Completed").
- **Time Tracking:** Start/pause/stop timers for individual tasks within a job.
- **Notes & Photo Capture:** Add textual notes and capture photos (e.g., of vehicle damage, completed repairs, specific part issues) directly linked to a job.
- **Digital Sign-off (Optional but desirable):** Basic functionality for a customer to digitally

sign a job completion.

C. Job Management for Part Delivery Personnel:

- **Delivery Schedule View:** A list of parts orders to be delivered, including destination (workshop bay/mechanic), required by time, and order details.
- **Delivery Status Update:** Ability to update the status of a part delivery (e.g., "Picked Up," "En Route," "Delivered").
- **Delivery Confirmation:** Obtain digital confirmation (e.g., signature or photo) upon successful delivery to the mechanic.
- **View Part Request Details:** Access to specific part details and quantities for each delivery.

D. Spare Parts & Inventory Management (for Spare Parts Inventory Staff):

- **Real-time Stock Inquiry:** Search for specific spare parts by name, part number, or category. View current stock levels, location (warehouse bay, shelf number), and pricing.
- **Part Request/Issue:** Inventory staff can issue parts against a work order or for general use.
- **Inventory Adjustment:** Basic functionality to mark parts as received, damaged, or returned.

E. Customer-Based Features (for WMS customer):

- **Service Schedule View:** Customers can view their upcoming and past service appointments.
- **Service Reminders:** Automated push notifications for upcoming service appointments or overdue maintenance.
- **Service Booking:** Ability for customers to request new service appointments directly through the app.
- **Real-time Service Progress:** Customers can track the live status of their vehicle's service (e.g., "In Inspection," "Parts Awaiting," "In Repair," "Ready for Collection").
- **Service Quality Feedback:** Provide a mechanism for customers to submit feedback on completed services and overall workshop experience.
- **E-Billing/Payment:** View and pay for invoices digitally within the solution.

4. Assignment Task

Your task is to act as a mobile solution development team commissioned by Greenstem Business Software Sdn Bhd. You are required to:

1. **Analyze the Scenario:** Understand the pain points, target users, and desired functionalities.
2. **Design the User Experience (UX) and User Interface (UI):**
   - Create wireframes and mockups for the key screens of the mobile solution, focusing on intuitive navigation and ease of use for the specified target users.
   - Consider the unique interaction patterns and visual aesthetics suitable for mobile devices.
3. **Propose a Technical Architecture (High-Level):**
   - Outline the main components of the mobile solution and how it might generally interact with backend systems (e.g., API calls for data retrieval and updates).
   - Suggest appropriate mobile development frameworks or technologies you would use (e.g., React Native, Flutter, native Android/iOS development).
4. **Develop a Functional Prototype (Minimum Viable Product - MVP):**
   - Implement a prototype demonstrating the core functionalities of *at least three* of the features listed under "Core Functionalities & Features." **You may choose to focus your prototype development on either the Workshop Management System (WMS) or the Spare Parts Management System (SPMS) aspects of the solution, incorporating relevant features for your chosen area.**
   - The prototype should be runnable on a mobile emulator or device.
5. **Prototype Presentation:**

- You are required to present your functional prototype, demonstrating its features and addressing how it solves the identified challenges.

Deliverables:

A) Prototype presentation:

Create a prototype of your app and present it to your tutor. Prepare a 10 minutes presentation. Your presentation slide should be at most 10 slides. Your presentation should include the following items:

1. Title of app
2. Introduction
3. Problem(s) and solution(s)
4. Navigation structure chart
5. Screen design
6. Conclusion

Submit your presentation slides (soft copy) to your tutor or via Google Classroom. All members must participate in the presentation.

B) Final Presentation:

Complete the assignment and present it to your tutor. Prepare a 20 - 40 minutes presentation (about 10 minutes for each team member). Your presentation should include the following:

1. Introduction
2. Live demo of your mobile app
3. Code inspection by your tutor

Submit the following items to your tutor:

1. Each Team (submitted by team lead) - a ZIP file containing the following items:

No	Deliverable	File Format	File Name Format
1	A presentation slide containing all the mobile app main screens.	PDF	<Programme Code+Group>_<Team Lead Name>_Presentation E.g. RSD2S1G5_Peter_Presentation
2	A copy of your program source code.	Flutter Project Folder	<Programme Code+Group>_<Team Lead Name>_ Source E.g. RSD2S1G5_Peter_Source
3	Appendix A: Coursework declaration form	PDF	<Programme Code+Group>_<Team Lead Name>_ AppendixA E.g. E.g. RSD2S1G5_Peter_AppendixA
4	Appendix B: Assignment evaluation form	Excel	<Programme Code+Group>_<Team Lead Name>_ AppendixB E.g. E.g. RSD2S1G5_Peter_AppendixB

File name format: <Programme Code_Group>_<Team Lead Name>
E.g. RSD2S2G5_Peter

2. Each Member should submit the following files:

No	Deliverable	File Format	File Name Format

1	Appendix C: Peer evaluation form	PDF	<Programme Code+Group>_<Team Lead Name>_<Your Name>_ AppendixC E.g. RSD2S1G5_Peter_Alice_AppendixC
2	Appendix D: Task description	PDF	<Programme Code+Group>_<Team Lead Name>_<Your Name>_AppendixD E.g. RSD2S1G5_Peter_Alice_AppendixD

Assessment Criteria:

CLO	Components	Criteria	Marks
CLO2	Individual	Quantity of work	20
		Quality of work	20
		Data management	20
		Originality and understanding	20
CLO3	Group	Quality of team solution	5
		Quality of presentation	5
	Individual	Completeness	5
		Teamwork	5
		Total	100

Note: Refer to the assignment evaluation form for more information.

Late Submission:
No late assignments will be accepted (get zero). Please do not argue with your tutor if you really failed to submit your assignment on time as the consequence on late submission has been given in advance.

However, in certain circumstances, the students may be allowed to turn in the assignment late. The students must contact the tutor BEFORE the assignment is due. The tutor will evaluate whether the circumstance warrants submitting the assignment late. A late penalty will be applied. The penalty is as follows:

Late submission within 1 - 3 days total marks to be deducted is 10 marks.
Late submission within 4 - 7 days: total marks to be deducted is 20 marks.
Late submission after 7 days: reject coursework and zero marks shall be awarded.

Please refer to TAR UMT guideline on late submission of coursework for more detail.

No-Cheating Policy:
A reminder on the no-cheating policy: You are NOT to share your work with your peers, but please feel free to have a discussion with your peers. If cheating is discovered, both parties will take the equal blame (get zero). Please note that the assignment should be your own work, although you may incorporate ideas or techniques from books, online resources, etc. By copying materials directly from any sources of materials will lead to zero. You have been warned. Whenever you face any problems, please seek advice from your tutor.