The Open University of Sri Lanka
Department of Electrical and Computer Engineering
Bachelor of Software Engineering
EEI4361 – User Experience Engineering

Mini Project
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Group Name: Black Pearl

Group Members: S92064060_M.N.M. Safran
S92064693_A.A.A. Amna
S92060869_A.R.F. Ilma
S92060596_L. Kishan

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01. Problem Identification

1. What is the Problem you have Identified to solve?

As a Software Engineering Students, we have planned to design a management system for the Driving Schools in Sri Lanka who have multiple branches.

Nowadays in Sri Lanka all the driving schools are based on Manual File handling system for their entire operations. This System might be useful to the Driving Schools those have multiple branches for their Entire Management and the operations. It could be useful to the people who have decided to get a valid Driving Licence.

Overall, A Driving School Management System (DSMS) can help streamline the operations of the school, improve student experience, and increase revenue.

Overall explanations of our Driving School Management System:

- The Driving School Management System (DSMS) is an online platform designed to manage various aspects of a driving school, such as **staff, students, courses, scheduling, payments, and more.**
- The system is designed to help driving schools streamline their operations, improve efficiency, and provide better service to their students.
- The system has different modules for **staff, students, instructors, and admins**, each with its own set of features and functionalities.
- The **staff module** allows staff members to manage,
    - Student information
    - Schedule courses and lessons
    - Track payments
    - Generate reports, and more.
- The **student module** allows students to,
    - Sign up for courses.
    - Schedule lessons.
    - View their progress.
    - Make payments.
    - Communicate with their instructors and staff.
- The **instructor module** allows instructors to,
    - View their schedule.
    - Manage lesson plans.
    - Track student progress
    - Communicate with staff and students.
- The **admin module** allows administrators to manage,
    - System settings
    - User permissions
    - Reports, and more.
- The system has various functional requirements, such as user authentication, data validation, course management, scheduling, payments, reporting, and more.
- The system also has non-functional requirements, such as performance, compatibility, security, documentation, and more.
- The system is expected to provide benefits to driving schools, such as improved efficiency, better communication, better record-keeping, and better service to students.

Problem we Identified:

- **Manual Process System:** The driving school currently uses a manual process for managing its operations, which is time-consuming, error-prone, and requires a lot of paperwork. This process can lead to inefficiencies, delays, and errors, which can negatively impact the business.

- **Inefficient Scheduling:** The current system for scheduling driving lessons is not efficient. Students must call the driving school to schedule a lesson and want to visit every time to ask about training classes, which can result in long wait times and delays in scheduling. And, the staff want to call for the students one by one every time for their training classes.

- **Lack of Real-time Information:** The current system lacks real-time information on student progress, instructor schedules, and vehicle availability. This lack of information can lead to scheduling conflicts, missed appointments, and inefficient use of resources.

- **Limited Access:** The current system provides limited access to information for students and instructors, which can lead to miscommunication, missed appointments, and a lack of transparency.

- **Inadequate Record Keeping:** The current system for record-keeping is inadequate, making it difficult to track student progress, instructor schedules, and vehicle maintenance.

- **Learning guides and Tutorials:** Current System doesn't provide Proper learning guides and tutorials for the students.

- **Written Examination:** In current system students meet difficulty to know about the examination details, current exact locations and the rules and regulations.

- **Inconsistent communication:** The current system lacks a centralized and consistent communication platform for staff members, instructors, students, and admin which can result in miscommunication and delayed responses.

- **Limited payment options:** The current system only allows for in-person payments, which can be inconvenient for students and staff members who prefer to pay online or via mobile devices.

Why we want such a System:

➢ **Efficient management:** With a driving school management system, managing all the aspects of the driving school becomes easier and more efficient. Tasks such as scheduling lessons, tracking student progress, and managing payments can be done from a single platform, saving time and increasing productivity.

➢ **Enhanced student experience:** A driving school management system can provide students with an enhanced experience. For example, students can schedule their lessons at their convenience, receive automatic reminders for upcoming lessons, and access their progress reports online.

➢ **Improved instructor management:** The system can assist in managing the instructor's schedule, ensuring that they are always available for lessons and can provide high-quality instruction to students.

➢ **Better financial management:** A driving school management system can help with financial management, such as tracking payments, generating invoices, and providing reports on revenue and expenses.

2. User Personas

According to the above scenario we will identify and showcase five user personas from four perspectives relevant to the identified problem as below. We can define user personas as representations of our target customers. Creating user personas involves researching and outlining our ideal customer's goals, concerns, behaviour, and demographic information. In that case we can categories user personas as Students, Staffs, Instructors and Admin.
In here,
Admin – **Buyer Persona**
Students, Staff, Instructors – **User Personas**

Thahir

> "Time is of the essence for me, and I need a driving school that can cater to my busy schedule without compromising on quality."

GENDER: Male
AGE: 25
LOCATION: Wellawetta
Education Qualification: Diploma
OCCUPATION: Freelance writer
FAMILY STATUS: Married.

STRENGTHS
- Ambitious.
- Motivated.
- Goal-oriented.
- Efficient

Concerns
- The availability of training slots that fit her schedule
- Quality of training

LIFESTYLE
Leads a busy lifestyle due to work commitments but enjoys watching movies and listening to music to unwind. Enjoys trying new restaurants and cuisines.

GOALS
Thahir's main goal is to complete her driving training within a short period and pass the driving test on the first attempt. She wants to use the system to manage her training schedule and track her progress.

Akila Dhambare

> "Efficient management is the key to success. With the right tools, we can streamline operations and provide the best experience for our students."

GENDER: Male
AGE: 28
LOCATION: Maharagama
Education Qualification: Graduate in business management
OCCUPATION: Customer service representative at the driving school
FAMILY STATUS: Married.

STRENGTHS
- Organized
- Efficient
- Communicative
- Detail-oriented

Concerns
- Quality of training provided by instructors
- Timely communication with students
- The accuracy of data stored in the system

LIFESTYLE
Balances work and personal life by engaging in physical activities like sports and hiking. Enjoys trying new cuisines and spending time with family and friends.

GOALS
Akila Dhambare's main goal is to ensure smooth operations of the driving school by managing student registrations, scheduling exams, and coordinating with instructors and other staff members.
He wants to use the system to efficiently manage his workload and track student progress.

L.Suthaharan

"Teaching is not just a job for me, it's my passion. Seeing my students succeed on the road is the greatest reward."

GENDER: Male
AGE: 40
LOCATION: Negombo
Education Qualification: Certification in driving instruction
Experience: Driving instructor with over 10 years of experience
OCCUPATION: Driving instructor
FAMILY STATUS: Married.

STRENGTHS
- Experienced
- Passionate
- Patient
- Adaptable

Concerns
- The quality of training materials
- Availability of necessary equipment
- Effectiveness of the system in tracking student progress.

LIFESTYLE
Leads a disciplined lifestyle and values punctuality. Enjoys traveling and exploring new places during his free time.

GOALS
Suthaharan's main goal is to provide high-quality training to his assigned students and track their progress throughout the training process. He wants to use the system to efficiently manage his schedule and communicate with students.

Dilan Perera

"As an administrator, I believe in data-driven decision-making. With the right insights, we can take our driving school to the next level."

GENDER: Male
AGE: 35
LOCATION: Dehiwela
Education Qualification: Business graduate
Experience: Managing operations of various organizations.
OCCUPATION: Owner and administrator of a driving school
FAMILY STATUS: Married.

STRENGTHS
- Strategic thinker
- Data-driven decision maker
- Goal-oriented
- Leadership skills

Concerns
- About the security and privacy of data stored in the system.
- Accuracy of reports generated by the system.
- The overall user experience of staff and students.

LIFESTYLE
Leads a busy lifestyle, often working long hours to ensure the smooth operations of the driving school. Enjoys reading and spending time with family.

GOALS
Dilan Perera'smain goal is to ensure the success and profitability of the driving school. He wants to use the system to monitor the performance of staff members and students, identify areas for improvement, and make data-driven decisions.

02. Identified Scenario

A. Student Registration and Branch Selection:
- The system should allow students (like guest) to register for the driving school Management system. (Provide name, age, address, phone number and preferred branch location)
- Students should be able to select their preferred branch location during the registration process.

B. Document Submission:
- Once Registered, the system should prompt (send SMS alert) the student to submit required documents such as, medical certificate, Birth certificate, NIC copy, and 06 Photographs.
- The student should be required to submit these documents to preferred branch location.

C. Staff Uploading Student Details:
- Once the student has submitted their documents, staff at the specific branch should verify the documents and upload the student details to the system and handled the documentations for **Department of Motor Traffic.**
- After document verification system should send a notification or SMS alert for students containing **Username and Password**.
- After a student entering the real dashboard of the system the system will ask for the payment for conducting the exam.

D. Exam Details and Conducting Exam:
- Once the payment has been done, the staff should provide the student with the exam details including date, location, and instructions for the written exam conducted by the **Department of Motor Traffic.**
- The student should conduct the exam at the specified location.

E. Uploading Exam Results and Learners Permit:
- After the exam has been conducted, the admin should upload the results to the system.
- The system should generate a valid learners permit for driving which the passed student can download. Else, Restricted.

F. Schedule Training Classes:
- Staff or admin should be able to schedule training classes for the student who passed in the written examination.
- The details of the training classes, including location, time, and date, should be provided to the student and instructor via the system.

G. Instructor Uploading Training Status:
- After the training classes have been conducted, the instructor should be able to upload the training status to the system.

H. Trial Examination for Driving:
- If the student successfully completed the training, staff or admin should schedule a trial test examination to the student.
- Finally, if the student passed the Trial Test Examination Valid Driving Licence will be issued by the **Department of Motor Traffic.**

I. Learning Guide and Tutorials:
- The system should Provide vehicle learning guide and some tutorials related driving lessons for the students.

J. Chat Option and Notification / SMS Alerts:
- The system should have a chat option for students to communicate with staff and instructors.
- The system should also send notification and SMS alerts to the students and instructors for important updates and remainders.

03. Task Analysis
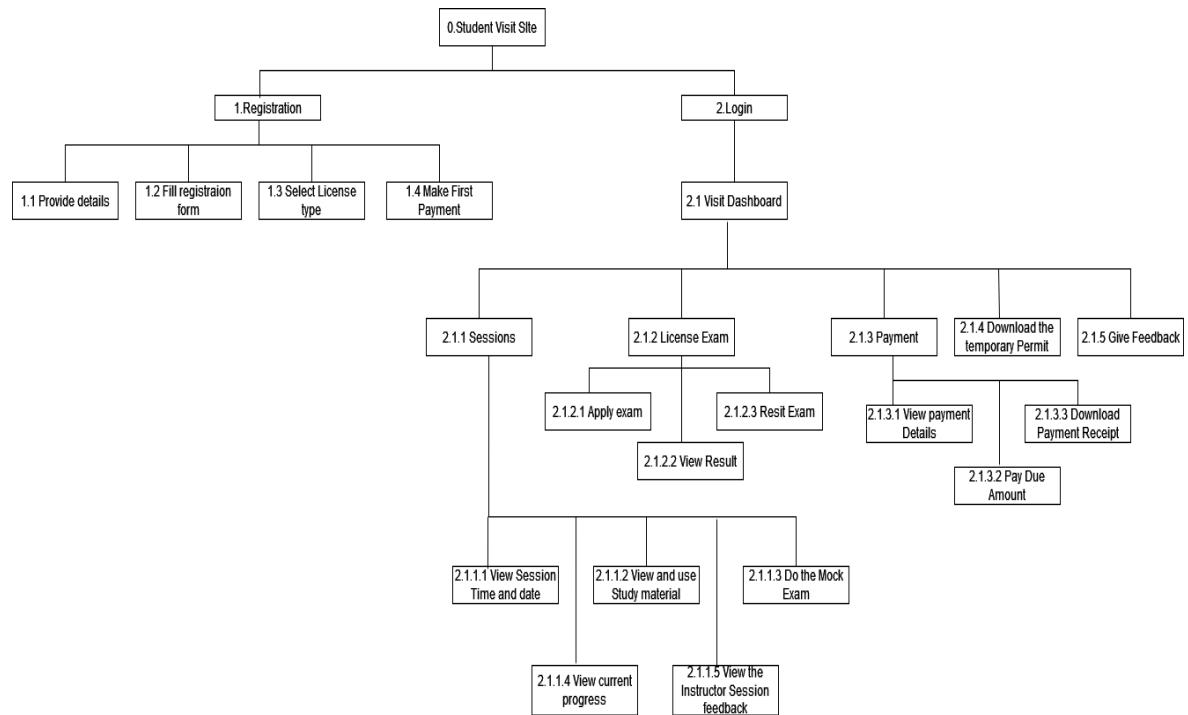
Student Visit Website:

1. Registration
1.1 Provide Details
1.2 Fill Registration Form
1.3 Select Licence type.
1.4 Make a First Payment
**2. Login**
2.1 Visit Dashboard
2.1.1 Session
2.1.1.1 View Session Date and Time
2.1.1.2 View and Use the Study Material
2.1.1.3 Do the mock exam.
2.1.1.4 View Current progress
2.1.1.5 View the Instructor session feedback.
2.1.2 Licence Exam
2.1.2.1 Apply For exam.
2.1.2.2 View Exam Result
2.1.2.3 Resit for Exam
2.1.3 Payment
2.1.3.1 View Payment Details
2.1.3.2 Pay Due Amount
2.1.3.3 Download payment Receipt
2.1.4 Download the Temporary Licence Permit
2.1.5 Give the feedback and contact us.

Plan 0, do 1 or 2
Plan 1 do 1.1,1.2,1.3,1.4.
Plan 2 do 2.1,2.2,2.3,2.4,2.5 it is depending on user needs.

> **Task 1 If student is new one so, do registration.**

Steps

0.Visit Website
1.Registration
1.1 Provide details.
1.1.1 Name
1.1.2 Address
1.1.3 Photo
1.1.4 Medical Certificate
1.1.5 Other Important Information
1.2 Fill Registration form for login
1.2.1 Email
1.2.2 Username
1.2.3 Password
1.3 Select License Type
1.4Make first Payment
1.4.1 Bank Deposit
1.4.2 Online Payment

Diagram
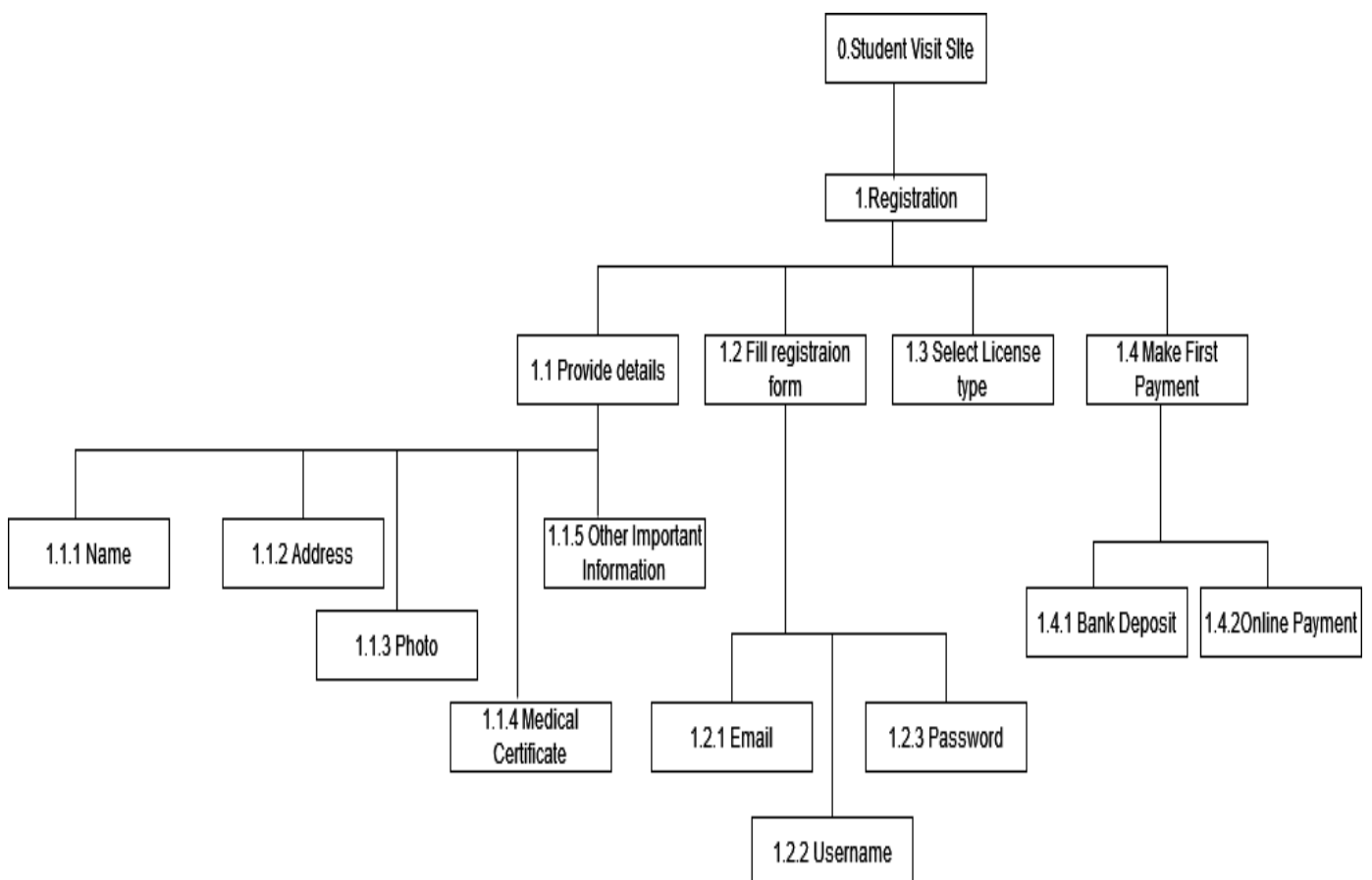
➢ **Task 2 Student with Session**

Steps

0.Student Visit Website
2.Login
2.1 Visit Dashboard
2.1.1 Session
2.1.1.1 View Session Date and Time
2.1.1.2 View and Use the Study Material
2.1.1.3 Do the mock exam.
2.1.1.4 View Current progress
2.1.1.5 View the Instructor session Individual feedback.

Diagram:
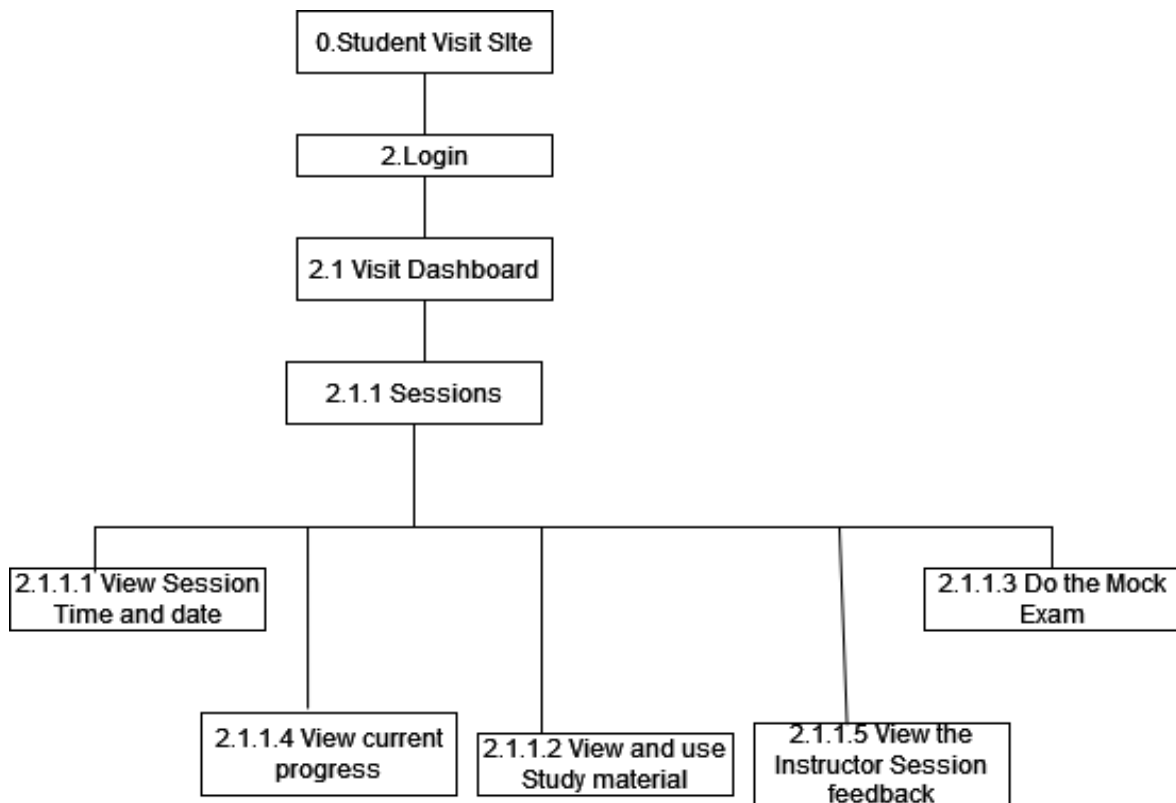
> **Task 3 Due Payment**

Steps

0.Student Visit Website
1.Registration
1.1 Provide Details
1.2 Fill Registration Form
1.3 Select Licence type.
1.4 Make a First Payment
2.Login
2.1 Visit Dashboard
2.1.3 Payment
2.1.3.1 View Payment Details
2.1.3.2 Pay Due Amount
2.1.3.2.1 Bank Deposit
2.1.3.2.2 Online Payment
2.1.3.3 Download payment Receipt

Diagram:
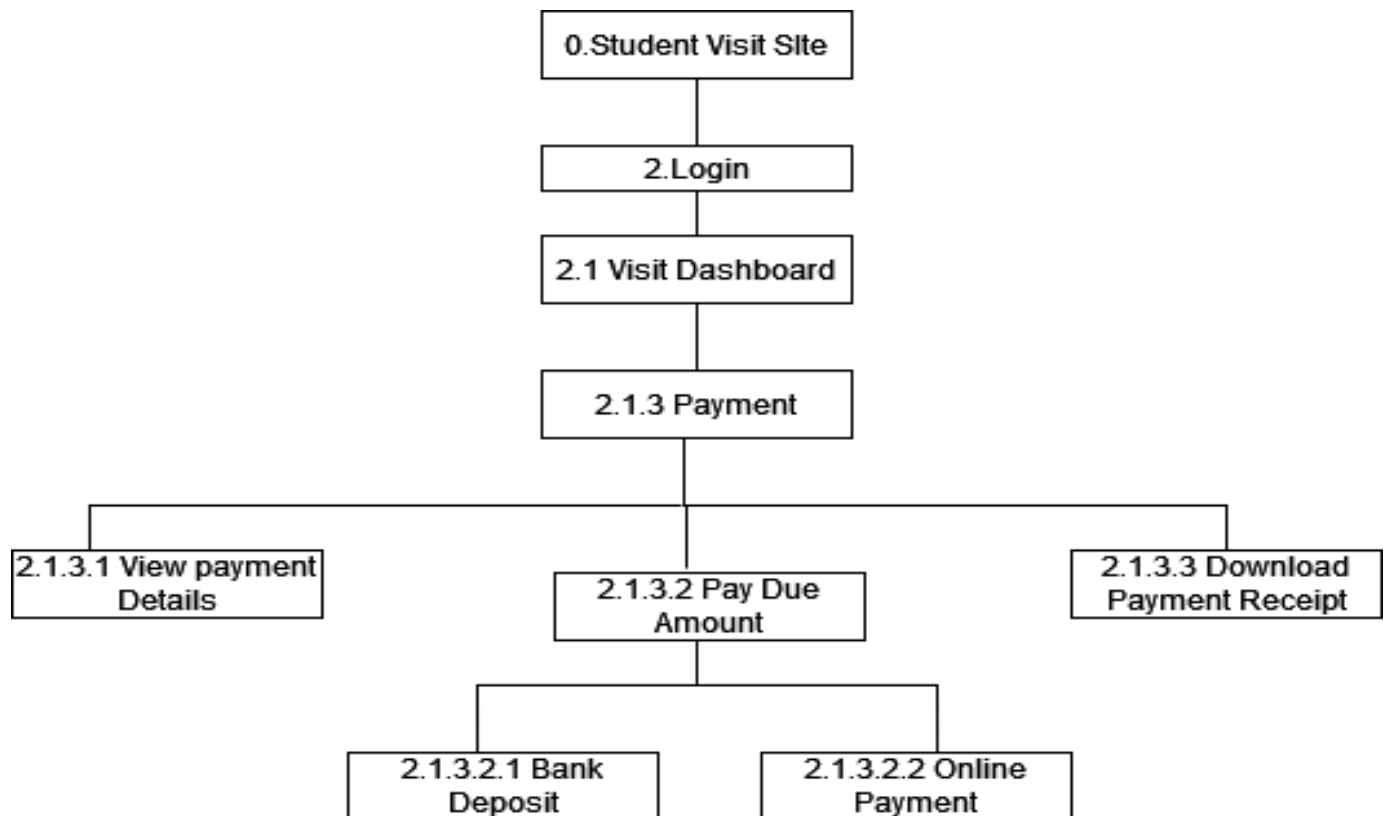
04.User Analysis.

User analysis should help to identify the key users, their characteristics, and tasks, which can inform the design and development of a user-friendly and efficient driving school management system.

Primary Users:

- **Students:** The primary users of the system are the students who want to learn how to drive and obtain a valid driving permit. They need to register for the driving course, submit their documents, pay for the course, schedule training classes, and take exams.

- **Instructors:** The driving instructors who provide the training classes and evaluate the students' performance are also primary users of the system. They need to access the students' profiles, schedule classes, upload training status, and provide feedback.

Secondary Users:

- **Staff/Admin:** The staff members or admins who manage the driving school branches and maintain the system are secondary users of the system. They need to upload the student details, schedule classes, provide exam details, upload results, and provide trial exams for students.

User Characteristics:

- **Students:** They may have different levels of computer literacy and may need clear instructions and guidance to navigate the system. They may also have different schedules and preferences for training classes, which should be accommodated by the system.

- **Instructors:** They need a clear overview of the students' profiles and progress in the training classes to provide effective guidance and feedback.

- **Staff/Admin:** They need a comprehensive and user-friendly interface to manage the system efficiently and respond to student inquiries promptly.

User Tasks:

- **Students:** They need to register, submit documents, pay for the course, schedule training classes, take exams, view results, and download valid learners permit for driving.

- **Instructors:** They need to access student profiles, schedule classes, upload training status, provide feedback, and conduct trial exams.

- **Staff/Admin:** They need to upload student details, schedule classes, provide exam details, upload results, and provide trial exams for students. They also need to manage the system's database, update the system's software, and troubleshoot any technical issues.

Environment:

- The system should be accessible from any location with an internet connection to accommodate the students and instructors' different schedules and locations.

- The system should be compatible with different devices such as laptops, desktops, tablets, and mobile phones to ensure ease of access and use.
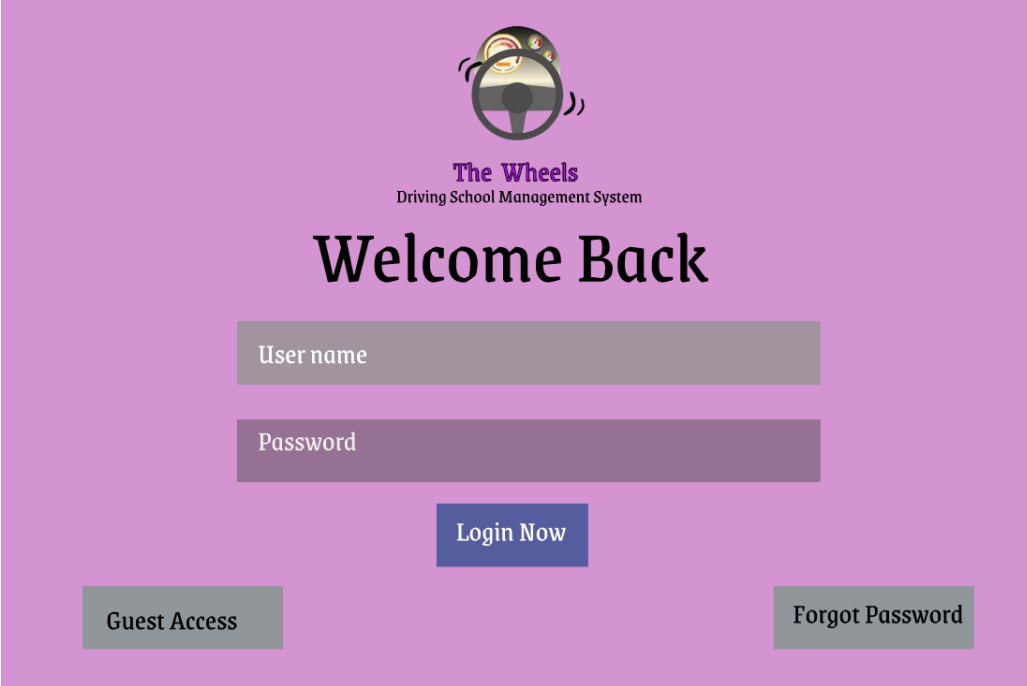
05.Prototypes

We have created several User Interface web applications for Driving School Management System.
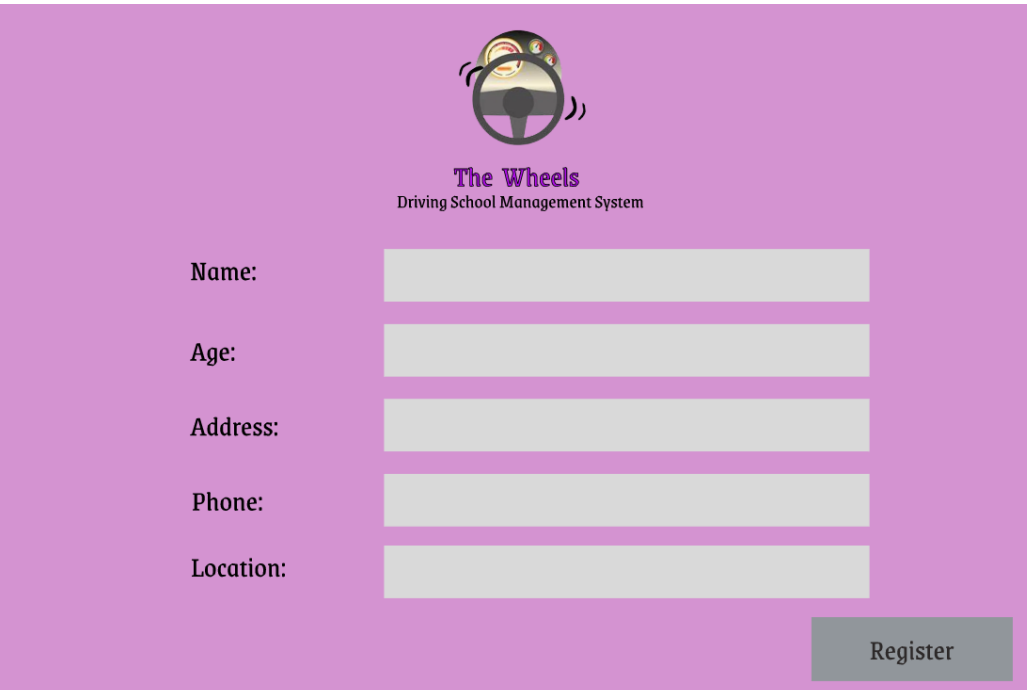
Figma Link:

https://www.figma.com/file/KRaIdYSsjkdoTctc9TapMy/Driving-School-MS?node-id=0%3A1&t=Sc0xyPrl4FvZatth-1

<u>Login</u>

Student Dashboard

Dashboard

8 Instructors	4 Schedules	Student Result

Schedules List
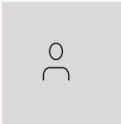
Search

Code	Slots	Date	Instructor	Amount	Remarks	Action
1	10	06-02-2021	Mohamed	3,500	Remarks	
2	12	06-02-2021	John	4,500	Remarks	
3	11	06-02-2021	Mohamed	4.500	Remarks	

Dashboard
Student
Instructor
Schedule
Enrollment
Payment

Exam List

Search

Exam Date	Student Name	Score	Remarks
2023.03.01	Janu	90	Remarks
2023.03.09	Kavi	50	Remarks
2023.03.16	Mala	50	Remarks

Download Learners Permit

Staff Dashboard

Instructor Dashboard

Dashboard

8 Schedules	4 Students
→	→

Reports List

Search

Training Name	Student Name	Score	Remarks
Training 1	Janu	90	Remarks
Training 2	Kavi	50	Remarks
Training 3	Mala	50	Remarks

Suthaharan

Dashboard
Master List
Reports <

Sanjana

Dashboard
Master List
Reports <

Admin Dashboard
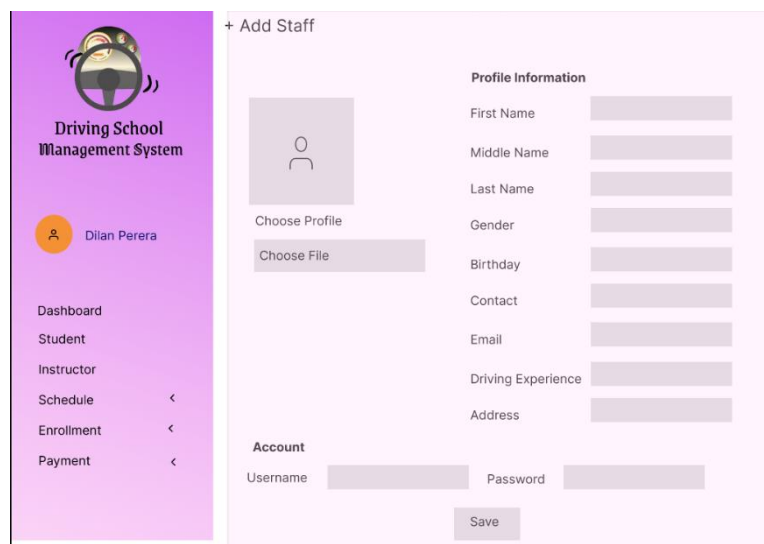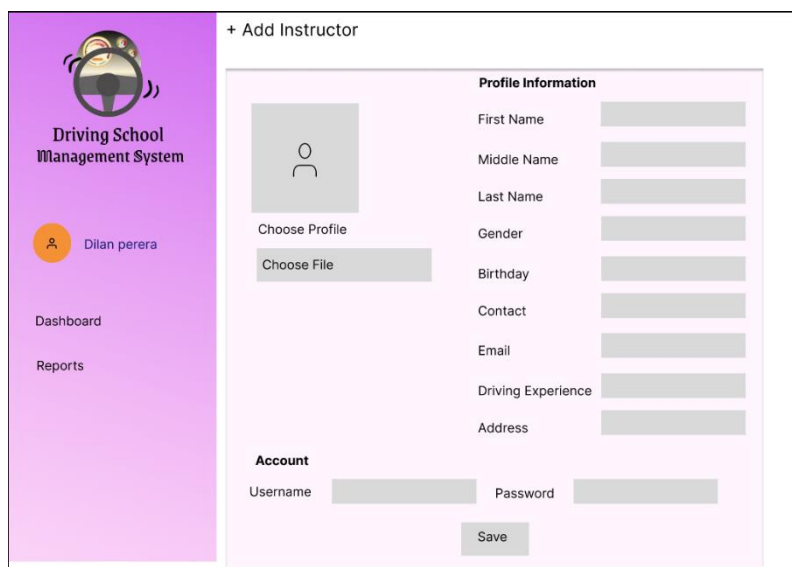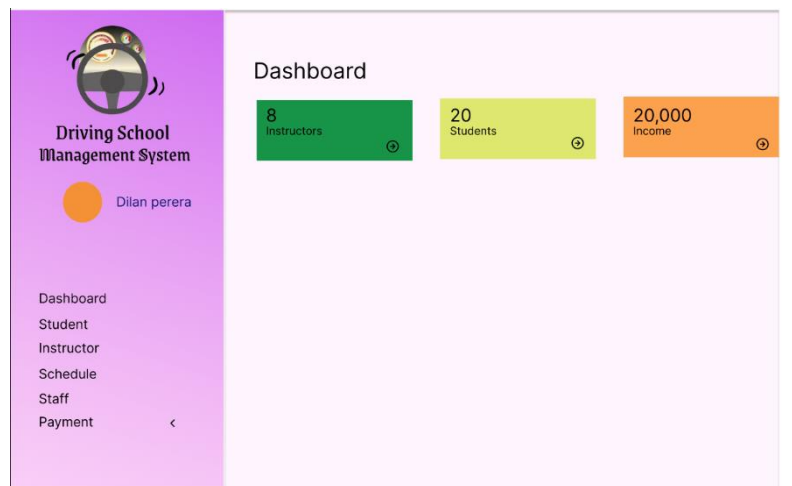
There are some other Interfaces also we have included in our Figma Design.

https://www.figma.com/file/KRaIdYSsjkdoTctc9TapMy/Driving-School-MS?node-id=0%3A1&t=Sc0xyPrl4FvZatth-1

06.Heuristic Evaluation

1. **Evaluator:**   Kasun Tharaka
   Undergraduate @ OUSL
   2nd Year – Software Engineering

I did a successful heuristic evaluation for the Driving School Management System (DSMS). Here overall, the system is clearly defined and well organized.

From this DSMS, I have found some positive and negative findings those are,

Positive Findings:

- ✓ The registration process is straightforward and easy to follow.
- ✓ The system provides clear instructions on what documents are required for registration.
- ✓ The system design to send clear and timely notifications to students about their exam details and updates.
- ✓ The system has other tutorials and learning guides for the user for informative and helpful.

Negative Findings:

- ✓ The interface design is cluttered and confusing.
- ✓ The payment process is confusing and lacks clear instruction.
- ✓ The system does not provide enough feedback to users on their actions.

2. **Evaluator:**   Mujahith Hilal
   Undergraduate @ OUSL
   2nd Year – Software Engineering

Positive Findings:

- ✓ The SMS alert feature is useful for students who prefer text messages over emails.
- ✓ Training scheduling and updates are more comprehensive for the student.
- ✓ Instructor upload feature is useful to handle students reports.
- ✓ The trial and examination features are helpful additions to the system.
- ✓ Online payment method is very helpful for the students nowadays.

Negative Findings:

- ✓ In the interface payment process is confusing and lacks clear instructions.
- ✓ The system does not allow for easy navigation between different features.
- ✓ The system must have the search function is preferrable.

3. **Evaluator:**   Hiruni Sewwandi
   Undergraduate @ OUSL
   2nd Year – Software Engineering

Positive Findings:

- ✓ The system provides a user-friendly dashboard with a clear overview of a student's progress.
- ✓ The system provides a detailed breakdown of exam results.
- ✓ The system provides clear and concise instructions for driving instructors.
- ✓ The system provides a useful feature for tracking student attendance.

Negative Findings:

- ✓ The system is not optimized for mobile use.
- ✓ The system lacks customization options for individual users.
- ✓ The system does not provide enough guidance for completing the medical certificate.

4. **Evaluator:**   Safrin Ahamed
                        Undergraduate @ SLIIT
                        3rd Year – Software Engineering

Positive Findings:

- ✓ The system provides a clear overview of upcoming training classes and exam dates.
- ✓ The system provides useful and informative feedback on the trial examination results.
- ✓ The system provides a useful feature for tracking students payments.
- ✓ The system provides a clear distinction between different types of licences.

Negative Findings:

- ✓ The system does not provide enough guidance on the application process for international students.
- ✓ The system does not provide enough information on the driving laws in Sri Lank.
- ✓ The system does not provide a clear path for students to follow in case of technical difficulties.

5. Evaluator: Rohini Ponseka
                      Undergraduate @OUSL
                      2nd Year – Software Engineering

Positive Findings:

- ✓ The system provides a user-friendly feature for tracking driving instructor feedback.
- ✓ System provides Easy management all over there branches. It might be useful for the customers.
- ✓ The system provides useful information on the documents required for registration.
- ✓ The system provides a useful feature for scheduling training classes.
- ✓ The interface provides download option for download learners permit if he/she passed the written examination. Else restricted.

Negative Findings:

- ✓ The system does not optimize for use on smaller screens.
- ✓ The system does not provide enough support for students who require language accommodations.

07.Thinking Aloud

We have selected five users, each with a different role, and assigned them tasks to use our driving school management system. We then conducted thinking aloud evaluations with five evaluators, each of whom was assigned one user to observe and evaluate.

1) **Evaluator:**   Piyumi Whatsala
Undergraduate @ OUSL
2nd Year – Software Engineering

User: A.H.A. Aman

Role: Instructor

Task: Create a new driving lesson and assign it to a student.

Feedback: Aman did a great job on this task. He found the interface easy to use and was able to quickly navigate to the necessary pages. He liked the layout of the form for creating a new lesson and found it straightforward. He did suggest that it would be helpful if the form had some default options for lesson duration, such as 30 minutes or 1 hour.

2) **Evaluator:**   M.T.M Zakir
Undergraduate @ OUSL
2nd Year – Software Engineering

User: Rukshima.

Role: Student

Task: Find and entroll in a driving licence course

Feedback: Rukshima had some trouble finding the course catalogue at first, as she expected it to be more prominently featured on the home page.

Once she found the catalogues, she appreciated the ability to filter courses by location, price, and schedule.

She found the course descriptions to be helpful in making her decision but suggested adding more visual aids such as photos or videos to showcase the driving school's facilities and instructors.

When she tried to entroll in a course, she had some confusion about the enrolment process and had to ask for help. Rukshima noted that this may be a potential pain point for users and recommended simplifying the enrolment steps or providing more guidance.

Overall, Rukshima found the website easy to navigate and informative, but suggested some improvements to make the enrolment process smoother.

3) **Evaluator:**   Nahdhy
Undergraduate @SLIATE
2nd Year – Software Engineering

User: Hirunika

Role: Student

Task: View their upcoming driving lessons and cancel one of them.

Feedback: Hirunika had no trouble completing this task. He found the interface intuitive and was able to easily locate his upcoming lessons. He appreciated that the system displayed the time and date of each lesson in a clear and easy-to-read format. He did suggest that it would be helpful if there was a confirmation message when cancelling a lesson to ensure that the cancellation was intentional.

4) **Evaluator:**   Imalshi
Undergraduate @ OUSL
2nd year Software Engineering

User: Gunarathna

Role: Instructor

Task: View a student's driving lesson history and update the student's progress.

Feedback: Gunarathna was able to complete this task with ease. He found the navigation to the student's lesson history page intuitive and appreciated that the system displayed the information in a clear and organized way. He suggested that it would be helpful if there was a way to sort the lesson history by date or by course.

5) **Evaluator:**   Joel Shane
Undergraduate @ OUSL
2nd year Software Engineering

User: Anjelo

Role: Staff

Task: Generate a report of all driving lessons completed in the past month.

Feedback: Anjelo was able to complete this task but had some trouble finding where to generate the report. He eventually found the option in the navigation menu but suggested that it could be made more prominent. He found the report generation process straightforward and appreciated that the report was displayed in a clear and organized format. However, he did suggest that it would be helpful if the report included more detailed information about each lesson, such as the instructor who taught it and the student who completed it.

08. Results (of Heuristics Evaluation and Thinking Aloud)

After successful two evaluations which are Heuristic and Thinking Aloud, we identified several problems to change in our system's User Experience and User Interface.

- ✓ Consider the application for oversea customers to get Valid Driving Licence.
- ✓ Improve the navigation and layout of the system to make it more intuitive and user-friendly.
- ✓ Provide better feedback and notifications to the users, such as confirmation messages when there are issues with data input.
- ✓ Enhance the search functionality to make it easier for users to find relevant information.
- ✓ Implement security measures, such as password protection and two factors authentication, to ensure the safety and confidentiality of user data.
- ✓ Offer more training and support to users to improve their understanding and use of the system.
- ✓ Simplify and streamline the payment process for students to reduce confusion and errors.
- ✓ Enhance the system mobile responsiveness to improve accessibility for users who access the system through their smartphones or tablets.

By implementing these changes, the driving school management system can become more user-friendly, efficient, and effective in meeting the needs of its users.

09.Conclusion

The Driving School Management System is a comprehensive solution that streamlines the entire process of managing a driving school, from student registration to certification. It has several features that cater to the needs of the students, staff, and instructors, making it an efficient system.

The system offers a user-friendly interface that allows students to register, upload documents, and make payments online. Staff can update student records, schedule exams, and training sessions, and track their progress. Instructors can upload training status and view student progress. The system also offers features such as chat options, notifications, and SMS alerts that improve communication among all stakeholders.

Through the heuristic evaluation and thinking aloud methods, several issues were identified, including poor navigation, confusing interface, and lack of consistency in design. These issues were addressed by improving the system's interface design, navigation, and overall usability.

Overall, the Driving School Management System provides an excellent solution for managing a driving school, improving efficiency, and enhancing the learning experience for students.