1. INTEGRATED SITUATION

Scenario

SmartPark is company located in Rubavu District, western province of Rwanda. It provides multiple car-related services. It is struggling with inefficiencies due to its manual, paper based system for managing car washing sales. The receptionist manually records car details including license plate, type, size, driver's name, phone number and records service package. The receptionist also records date, package type with its associated cost for the car. At the end of the wash, the receptionist records the amount paid for the service offered to car. This manual process is inefficient, prone to errors and makes it difficult to tack service, payment and generate invoice efficiently. The SmartPark needs a web based application that handles the management of car washing sales process. The system should allow the receptionist to digitally record car, manage service packages, track payments and generate reports.

Task: Develop Car washing sales management System (CWSMS)

As a full stack developer, you are given 7 hours to develop that web based application by:

1. Using attributes provided below, design an Entity Relationship Diagram (ERD) that represents the relationship between their entities.
    - Identify appropriate **primary keys** and **foreign keys** based on the relationships among the entities.
    - Entities and attributes are:

        1. **Package**(PackageNumber,PackageName,PackageDescription,PackagePrice)
        2. **Car**(PlateNumber, CarType, CarSize, DriverName, PhoneNumber)
        3. **ServicePackage**(RecordNumber,SeviceDate)
        4. **Payment**(PaymentNumber,AmountPaid, PaymentDate)

    - ERD should be drawn before using the computer.
    - ERD should be drawn on plain paper using pencils.

- ERD should indicate cardinalities, relationships with correct symbols

2. Creating database called **CWSMS** with Car, Package, Payment, ServicePackage tables as designed in ERD.
   - Use this information for ServicePackage

PackageName	PackageDescription	PackagePrice)
Basic wash	Exterior hand wash	5000 rwf
Classic wash	Interior hand wash	10,000 rwf
Premium wash	Exterior and Interior hand wash	20,000 rwf

3. Saving your work in your real names in a folder called **(FirstName_LastName_National_Practical_Exam_2025).**
4. Preparing React.js Front-end application development environment by installing required modules and dependencies
5. Preparing JavaScript runtime environment for Node.js
6. Creating react.js components with UI features that will enable user to input his data in the tables above and display required reports.

- Menu bar/Pages of web application should include Car,Packages, ServicePackage, Payment, Reports and Logout options.
- The web application should be responsive

7. Creating react.js components with UI features that will enable user to input his data in the tables above and display required reports.
8. Developing backend and frontend of parking sales management system.
   - Name backend project folder as **backend-project** and frontend project folder as **frontend-project**.
   - Use Tailwind CSS to implement UI design.
   - Your backend application should communicate to MySQL database/MongoDB to perform CRUD operations of using Node.js runtime environment and express.js framework.

Note: 1.Insert operation should be used on all four (4) forms (Car, Services, ServiceRecord, Payment).

2. Delete, update, retrieve operations should only be used on ServiceRecord form.

9. Creating react.js components with UI features that will enable user to input his data in the tables above and display required reports.
10. Creating a session based login user account having username and password.
11. Integrating your react.js application to backend application using Axios to enable interaction of your react.js application with node.js application.
12. Generating a bill of package to the driver.
13. Generating daily reports containing PlateNumber, PackageName, PackageDescription , AmountPaid and PaymentDate.
14. Removing permanently your project with its related configurations after being marked.

- Ask permission to the assessor before removing your project.

Note to the assessor:

- An assessor may promptly intervene to prevent the unnecessary use of internet and any other injury/incident that may occur during assessment
- The assessor should allow lunch time (one hour) break for candidate
- The assessor should ensure that each candidate is given time to exhibit his/her project by answering the following question:
    1. Describe your product in brief.
    2. Which difficulties have you met along the implementation of the project
    3. How did you overcome the difficulties
- The assessor should make sure that the distance between candidates prevents cheating
- The assessor should collect all ERD drawn by the candidates together with the exported project as evidences.