MURANG’A UNIVERSITY OF TECHNOLOGY

DEPERTMENT OF COMPUTER SCIENCE

BACHELOR OF SCIENCE IN COMPUTER TECHNOLOGY

UNIT: SCS203 PROGRAMMING AND DATABASE PRACTICUM

Reg No: SCS201/3028/2023

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PROJECT PHASES

1. PROJECT ANALYSIS
2. PROJECT REQUIREMENTS
3. PROJECT WORK PLAN
4. PROJRCT WORK FLOW
5. PROGRESS

PROJECT ANALYSIS

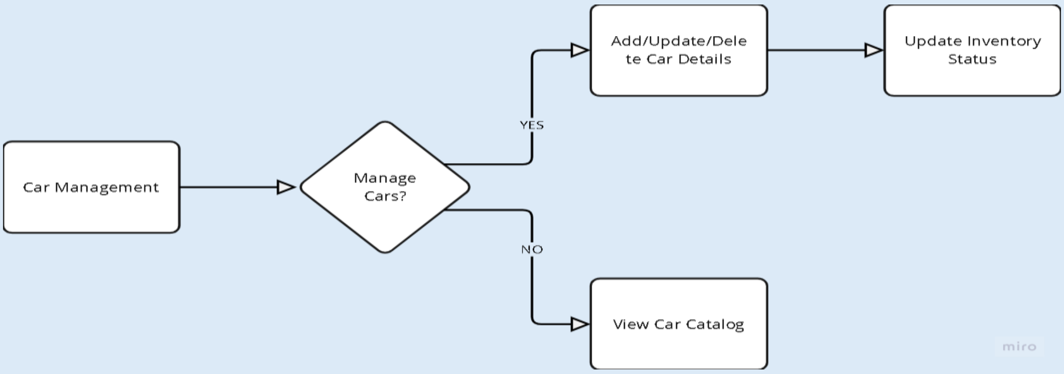
The Car Dealer Management System is designed to assist car dealerships in managing their operations efficiently. This system is intended for administrative use, providing tools to manage various aspects of the dealership, including cars, customers, sales, orders, inventory, staff, and transactions. The goal is to streamline processes, enhance productivity, and improve decision-making through comprehensive data management.

SYSTEM COMPONENTS

1. Car Management

The car management allows administrators to manage car inventory by adding, updating, and deleting car details such as Model, Year, Make, Brand, Status and price.

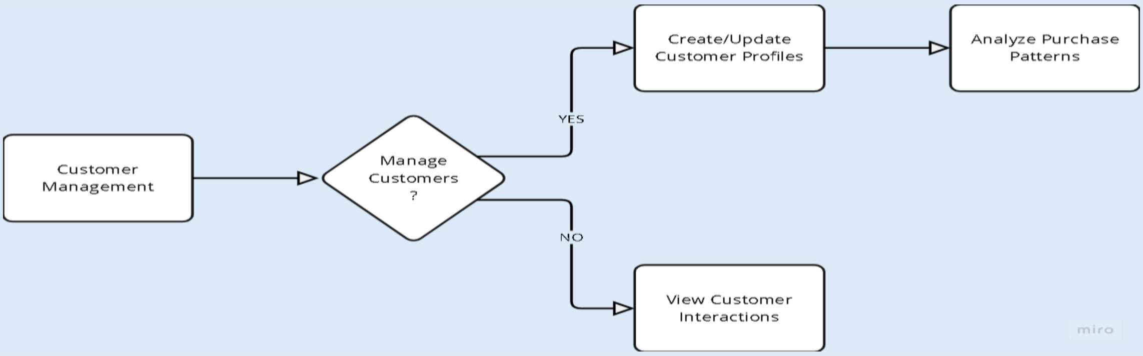
- **Features:**
  - ✓ Car cataloguing with detailed specifications.
  - ✓ Tracking of car availability and status.
  - ✓ Integration with inventory management for real-time stock updates.



2. Customer Management

This module is used to manage customer information, including contact details and purchase history.

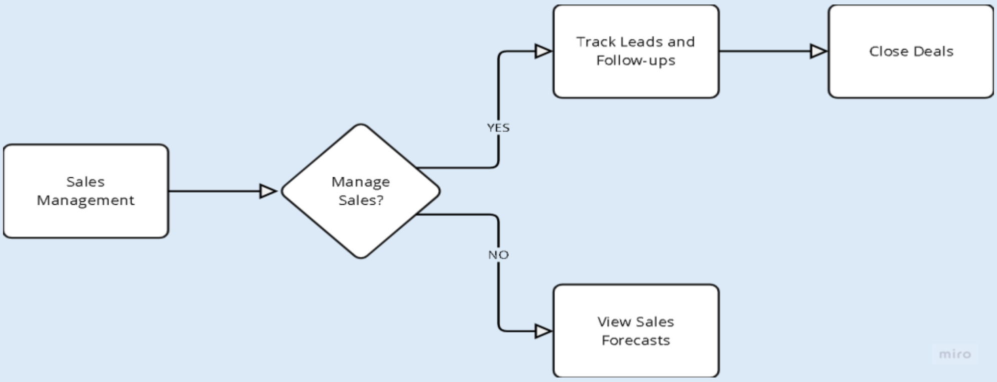
- **Features:**
  - ✓ Customer profile creation and management.
  - ✓ Tracking of customer interactions and communications.
  - ✓ Analysis of customer purchase patterns for targeted marketing.


Customer Management
Manage Customers ?
YES
NO
Create/Update Customer Profiles
Analyze Purchase Patterns
View Customer Interactions
miro

3. Sales Management

The sale management module facilitates the management of sales processes, from lead generation to closing deals.

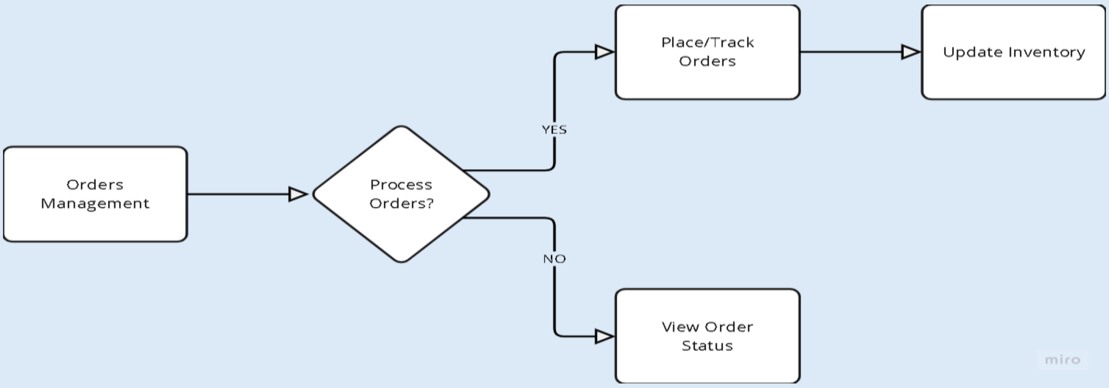
- **Features:**
  - ✓ Lead tracking and follow-up management.
  - ✓ Sales forecasting and performance analysis.
  - ✓ Integration with transaction management for seamless deal closure.



4. Orders Management

The Orders management module handles order processing, including new vehicle orders and parts requests.

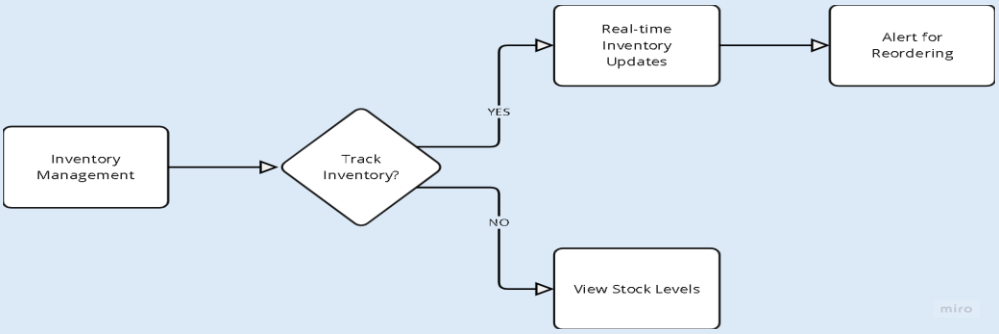
- **Features:**
  - ✓ Order placement and tracking.
  - ✓ Management of order status (e.g., pending, in transit, delivered).
  - ✓ Integration with inventory for automatic stock updates.



5. Inventory Management

This module ensures accurate tracking and management of car and parts inventory.

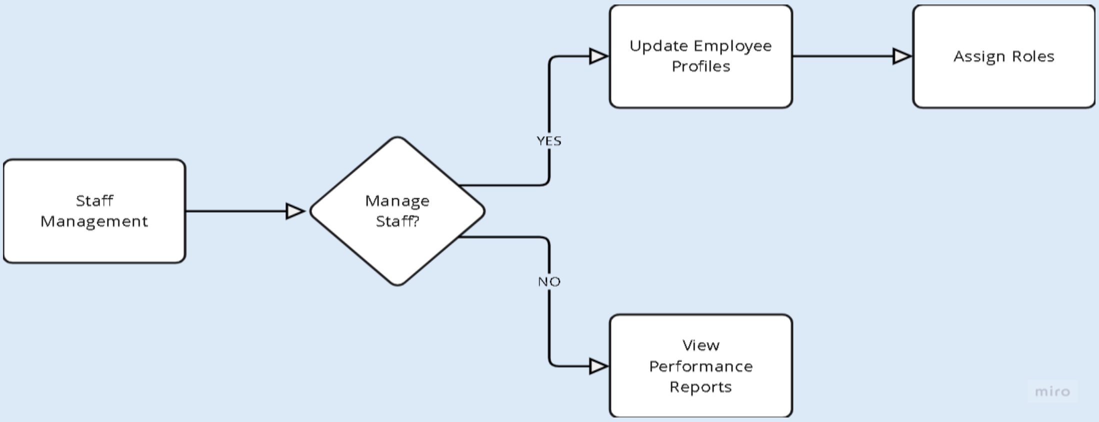
- **Features:**
  - ✓ Real-time inventory tracking.
  - ✓ Automatic stock level alerts for reordering.
  - ✓ Integration with sales and orders modules for seamless inventory updates.



6. Staff Management

This module is used to manage staff information, roles, and performance.

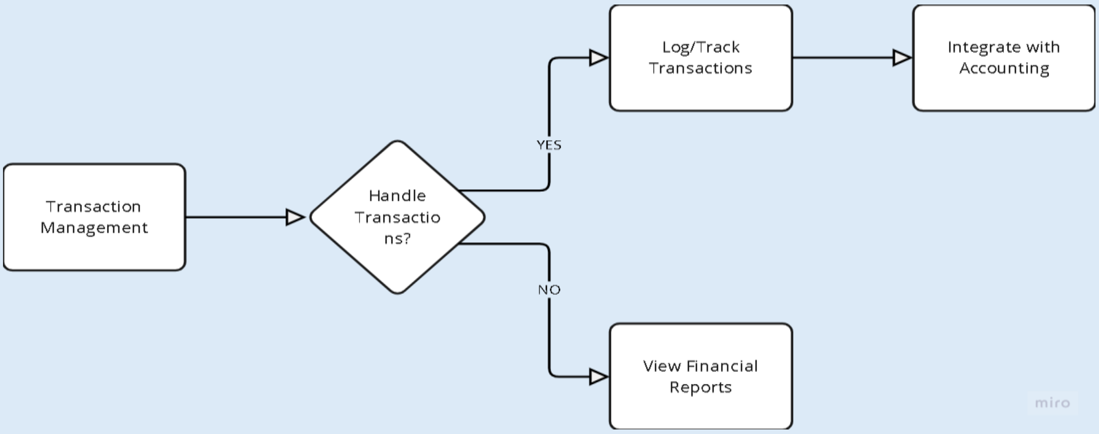
- **Features:**
  - ✓ Employee profile management.
  - ✓ Role-based access control for system security.
  - ✓ Performance tracking and evaluation tools.



7. Transaction Management

This module handles all financial transactions related to sales, purchases, and services.

- **Features:**
  - ✓ Transaction logging and tracking.
  - ✓ Integration with accounting systems for financial reporting.
  - ✓ Support for multiple payment methods.



PROJECT REQUIREMENTS

System Requirements

1. **Hardware Requirements**:

Server specifications: At least 8 GB RAM, 2 TB storage, and a quad-core processor.

Client devices: Computers or laptops with internet access.

2. **Software Requirements:**

Operating System: Windows or Linux.

Database Management System: MySQL or PostgreSQL.

Programming Language: Python, Java, html and css

Functional Requirements

- ✓ The system must allow administrators to add, update, and delete car details.
- ✓ The system should track car availability and status.
- ✓ The system must integrate with inventory management for real-time stock updates.
- ✓ The system must allow administrators to create and manage customer profiles.
- ✓ The system should track customer interactions and communications.
- ✓ The system must analyse customer purchase patterns for targeted marketing.
- ✓ The system must facilitate lead tracking and follow-up management.
- ✓ The system should provide sales forecasting and performance analysis tools.
- ✓ The system must integrate with transaction management for seamless deal closure.
- ✓ The system must allow administrators to place and track orders.
- ✓ The system should manage order status (pending, in transit, delivered).
- ✓ The system must integrate with inventory for automatic stock updates.
- ✓ The system must track inventory levels in real-time.
- ✓ The system should provide automatic stock level alerts for reordering.
- ✓ The system must integrate with sales and orders modules for seamless inventory updates.
- ✓ The system must allow administrators to manage employee profiles.
- ✓ The system should implement role-based access control for system security.
- ✓ The system must provide performance tracking and evaluation tools.
- ✓ The system must log and track all financial transactions.
- ✓ The system should integrate with accounting systems for financial reporting.
- ✓ The system must support multiple payment methods.

Non-Functional Requirements

- The system must respond to user inputs within 2 seconds.
- The system should handle at least 100 concurrent users without performance degradation.
- The system must implement role-based access control to restrict unauthorized access.

- The system should encrypt all sensitive data (e.g., financial transactions, customer information).
- The system must have an intuitive user interface that is easy to navigate.
- The system should provide clear instructions and feedback to users.
- The system must be able to scale up or down based on changing business needs.
- The system should support easy integration with new modules or features.
- The system must ensure data consistency and integrity across all modules.
- The system should provide backup and recovery mechanisms to prevent data loss.
- The system must be easy to update and maintain without disrupting operations.
- The system should provide clear documentation for developers and administrators.

PROJECT WORK PLAN

Here is a project work plan for the Car Dealer Management System over a period of 9 weeks:

Week 1: Project Planning and Design

Define project scope and objectives.

Conduct stakeholder interviews to gather requirements.

Develop system architecture.

Create a detailed project timeline and resource allocation plan.

Week 2: System Design Finalization

Finalize system architecture based on feedback from stakeholders.

Develop detailed design documents for each module (car, customer, sales, orders, inventory, staff, transaction).

Plan the database schema and data models.

Prepare a comprehensive technical specification document.

Week 3: Development Setup and Initial Coding

Set up the development environment (IDEs, version control systems, etc.).

Install necessary software and tools (e.g., frameworks, libraries).

Begin coding the core modules (e.g., user authentication, basic UI components).

Implement the database schema.

Week 4: Car and Customer Management Module Development

Develop the car management module (add, update, delete car details).

Implement the customer management module (create and manage customer profiles).

Integrate these modules with the database for data persistence.

Week 5: Sales and Orders Management Module Development

Develop the sales management module (lead tracking, sales forecasting).

Implement the orders management module (place and track orders).

Integrate these modules with the inventory module for real-time updates.

Week 6: Inventory and Staff Management Module Development

Develop the inventory management module (track inventory levels, automatic stock alerts).

Implement the staff management module (manage employee profiles, role-based access control).

Integrate these modules with other relevant modules.

Week 7: Transaction Management and Integration

Develop the transaction management module (log and track financial transactions).

Integrate this module with accounting systems for financial reporting.

Ensure all modules are fully integrated and functional.

Week 8: Testing and Debugging

Conduct unit testing and integration testing for each module.

Perform system testing to ensure all components work together seamlessly.

Identify and fix bugs or issues found during testing.

Week 9: Deployment and Final Testing

Deploy the system on the production server.

Conduct user acceptance testing (UAT) with stakeholders.

Address any final issues or feedback from UAT.

Document lessons learned and plan for future updates and maintenance.

PROJECT WORK FLOW

ENTITY RELATIONS DIAGREMS (ENTITIES AND ATTRIBUTES)

1. Customers

Attributes: CustomerID (PK), Name, Phone, Email, Address.

Relationships: Can place multiple orders and schedule multiple appointments.

2. Cars

Attributes: CarID (PK), Make, Model, Year, Brand, Price, Status.

Relationships: Linked to inventory and sales transactions.

3. Orders

Attributes: OrderID (PK), CustomerID (FK), CarID (FK), OrderDate, TotalAmount.

Relationships: Connected to customers and cars.

4. Sales

Attributes: SalesID (PK), OrderID (FK), StaffID (FK), SaleDate, PaymentMethod.

Relationships: Tied to orders and staff users.

5. Inventory

Attributes: InventoryID (PK), CarID (FK), QuantityAvailable.

Relationships: Tracks car availability and links to cars.

6. Transactions

Attributes: TransactionID (PK), CustomerID (FK), SalesID (FK), AmountPaid, PaymentDate.

Relationships: Associated with sales for payment tracking.

7. Staff Users

Attributes: StaffID (PK), Picture, Name, Role, Phone, Email.

Relationships: Handles sales and appointments.

8. Appointments

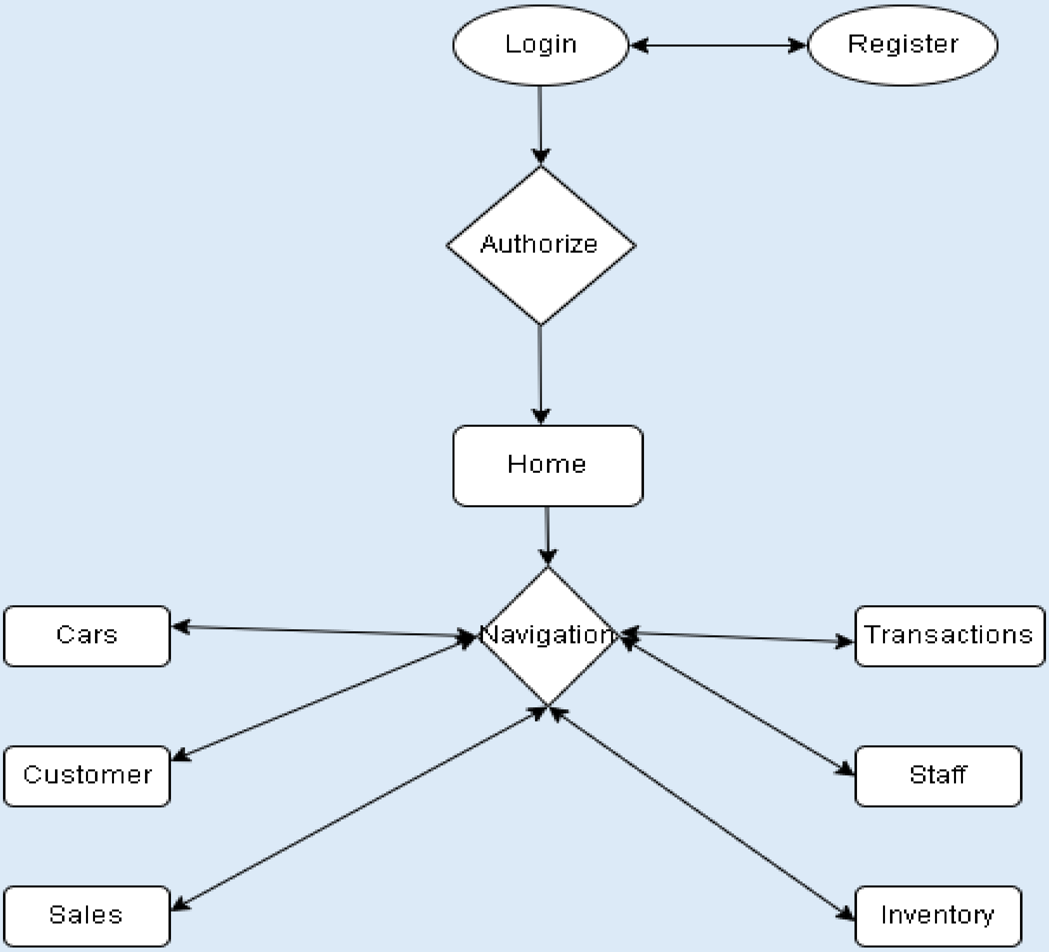
Attributes: AppointmentID (PK), CustomerID (FK), StaffID (FK), AppointmentDate, Purpose.

Relationships: Links customers with staff for meetings or test drives.

Entity 1	**Relationship**	**Entity 2**	**Cardinality**
Customers	Places	Orders	1: N
Customers	Schedules	Appointments	1: N
Orders	Includes	Cars	N:1
Orders	Generates	Sales	1:1
Sales	ProcessedBy	Staff Users	N:1

Sales	Has	Transactions	1: N
Cars	TrackedIn	Inventory	1: N
Appointments	HandledBy	Staff Users	N:1

FLOWCHART


Login
Register
Authorize
Home
Navigation
Cars
Transactions
Customer
Staff
Sales
Inventory