E-Commerce CRM System

Course Title: CS502052 – Enterprise System Development Concepts (ESDC)

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1. Topic Selection and Initial Research

- **Project Topic:** *E-Commerce Customer Relationship Management (CRM) System*
- **Project Proposal:** The objective of this project is to develop an E-Commerce Customer Relationship Management (CRM) system that helps online retailers manage their customer interactions, optimize marketing efforts, and improve customer satisfaction and retention. The system will focus on customer data management, personalized marketing, and order history tracking as the core functionalities.
- **Scope:** The project will involve creating a CRM system specifically designed for e-commerce businesses. The system will support user authentication, customer profile management, personalized marketing campaigns, and order history management. The system will be designed following the SDLC model, with emphasis on analysis, design, and implementation stages.

2. Analysis and Design

Use-case Diagram: The use-case diagram will depict at least the following actors and their corresponding use cases:

Actors	Customer
	Marketing Manager
	Sales Representative
	Administrator
Use Cases	Manage customer profiles
	View customer order history
	Segment customers for marketing campaigns
	Create and send personalized marketing campaigns
	Track campaign effectiveness
	Manage user accounts (Administrator only)

Data Flow Diagram (DFD):

Processes	Customer profile management	
	Order history tracking	
	Customer segmentation	
	Campaign creation and tracking	
Data Stores	Customer database	
	Order history	
	Marketing campaigns	
	User accounts	
External Entities	Email marketing service	
	E-commerce platform	

Entity-Relationship Diagram (ERD):

Entities	Customer (attributes: customer_id, name, email, preferences, purchase_history)
	Order (attributes: order_id, customer_id, order_date, items, total_amount)
	Campaign (attributes: campaign_id, name, target_segment, start_date, end_date, success_rate)
	User (attributes: user_id, name, role, email, password)
Relationships	A customer can place multiple orders.
	A customer can be part of multiple campaigns.
	A campaign targets multiple customers.

Other UML Diagrams:

- Class Diagram: Represents classes such as *Customer*, *Order*, *Campaign*, *User*, and their relationships.
- Sequence Diagram: Illustrates the flow of creating a personalized marketing campaign and tracking its effectiveness.

3. Implementation

Core Functions to Implement:

- Customer Profile Management:

- Manage customer profiles: Allows administrators and sales representatives to view and update customer information, including purchase history and preferences.
- Search and segment customers: Enables the marketing manager to segment customers based on purchase history, preferences, and demographics.
- Personalized Marketing:
  - Create and send marketing campaigns: Marketing managers can create personalized email campaigns targeted at specific customer segments.
  - Track campaign success: The system tracks the success rate of campaigns by monitoring customer responses and conversion rates.
- Order History Tracking:
  - View order history: Customers can log in to view their order history, including details about each order, such as items purchased, dates, and total amounts.
  - Analyze customer behavior: Sales representatives can analyze customer purchasing trends to inform sales strategies..

Mandatory Basic Functions:

- User Authentication:
  - User registration, login, logout, and role-based access control (Customer, Marketing Manager, Sales Representative, Administrator).
- Error Handling:
  - The system should handle errors gracefully, such as invalid customer data or issues with campaign creation.
- Basic Navigation:
  - A user-friendly interface that allows easy navigation between customer management, marketing campaigns, and order history modules.

Deliverables:

- Functional Demo Program: A working CRM system tailored for an e-commerce context, showcasing the implemented core functionalities, with a focus on user experience and system reliability.