Assignment 3: System & Data Modelling

Weight: **40 points**
Due: **Friday 8 August 2025 @ 23:59 GMT**
Type: **Individual assignment**

Purpose

Assess your ability to model systems and data with multiple techniques, interpret diagrams, and integrate non-functional requirements.

Tasks & Point Values

#	Task	Pts
1	**UML Class Diagram & Explanation** – Draw a UML class diagram for your client's project (classes, attributes, methods, relationships: inheritance, association, aggregation, composition). Supply a ~250-word rationale referencing Kendall's OO analysis and Pressman's design principles, and explain how non-functional needs (e.g., reliability, scalability) shaped the design.	10
2	**High-Level Architecture Diagram** – Sketch the overall system architecture (frontend, backend, database, external APIs). C4 container or layered styles are acceptable. Provide a ~300-word justification linking architecture to functional and non-functional attributes (performance, security), citing Sommerville and Pressman.	10
3	**Sequence Diagram & Process Narrative** – Create a UML sequence diagram for a key process (e.g., user registration, payment workflow) with a step-by-step narrative covering interactions, assumptions, and alternative paths. Discuss how this dynamic view complements your static models.	10
4	**Data & Process Modelling** – Produce (a) an Entity-Relationship Diagram (entities, keys, relationships) and (b) a Data-Flow Diagram or structured process model (context + level 1). Explain how these capture the information domain and data transformations, and compare ERDs vs DFDs, referencing Kendall.	10

Submission Instructions

Submit a single **PDF** containing all diagrams (exported from your chosen tool) and ~2,000 words of explanations. Ensure diagrams are readable, labelled, and properly cited.

Evaluation Criteria

Marks will assess correctness, consistency across models, diagram clarity, quality of explanations, integration of non-functional considerations, and originality.