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CS510 Assignment 1 Solution

Fall 2026

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CS510 — Software Requirements and Specification

Assignment No. 1 — Fall 2026 | Sample Solution | Total Marks: 20 | Due Date: 5 November 2026

Scenario: Smart Ride-Hailing System (SRHS). During preliminary elicitation meetings, raw stakeholder statements S1 to S7 were captured. Task 1 classifies statements S2, S5, S6 and S7 and rewrites each as a formal requirement. Task 2 finds the quality flaw in statements S1, S3 and S4 and rewrites each as a valid requirement.

Task 1: Requirement Categorization and Specification Matrix (10 Marks)

Each statement is classified using the course concepts (Functional, Non-functional, Domain, Inverse, Design and Implementation Constraints) and restated as a formal requirement beginning with “The system shall…”.

Req ID	Original Statement Reference	Requirement Type	Formal Standardized Requirement Statement
REQ-01	S2	Functional	The system shall allow passengers to search for available rides by distance, vehicle type, and driver rating.
REQ-02	S5	Inverse	The system shall not display driver contact numbers to passengers after a ride is completed.
REQ-03	S6	Design and Implementation Constraint	The system shall be developed using the Python programming language with the Django framework and shall be deployed exclusively on Linux servers.
REQ-04	S7	Domain	The system shall not allow any account to carry an overdue balance, except VIP customer accounts, which may carry a negative balance of up to $50.

Task 2: Requirement Analysis and Quality Flaw Rectification (10 Marks)

Each statement below violates one key characteristic of a good requirement. The table names the violated characteristic, explains the failure briefly, and gives a corrected, standard requirement.

Statement	Violated Quality Characteristic	Reason for Violation	Rectified Standard Requirement
S1	Feasible	A single basic web server cannot process 10,000 ride requests per second at peak hours, so the demand exceeds what the stated setup can deliver.	The system shall process up to 10,000 ride requests per second during peak hours using a scalable, load-balanced server infrastructure.
S3	Consistent	Two different date formats are used in the same system (mm/dd/YYYY for driver ratings and dd/mm/YYYY for registration dates), which can confuse users and misread dates.	The system shall display all dates, including driver rating dates and user registration dates, in the dd/mm/YYYY format consistently throughout the system.
S4	Verifiable	“Easy to use” and “visually pleasing” are subjective terms with no measurable test, so compliance cannot be objectively verified.	The system shall achieve a System Usability Scale (SUS) score of at least 80 in usability testing with at least 20 representative users, and at least 90% of first-time users shall complete a ride booking without assistance within three minutes.