

Software Design and Architecture (SE2002)

Date: February 29th 2024

Course Instructor(s)

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Sessional-I Exam

Total Time: 1 Hour

Total Marks: 30

Total Questions: 2

Semester: SP-2024

Campus: Karachi

Dept: Software Engineering

Student Name

Roll No

Section

Student Signature

CLO # 1: Understand the role of design and its major activities within the software development process, with focus on the Unified process

Question 1:

[6*3=18]

- Explain the importance of software design and architecture in the development process.
- Draw a decision table using the True/False method for the following business rules:
A customer can place an order for a product if the customer's credit status is good and the quantity required is less than or equal to the quantity in stock. If the customer's credit status is not good, then the message 'Order declined' is displayed and quantity in stock is not checked. If the quantity required is greater than the quantity in stock, then the message 'Insufficient stock is displayed.
- What happens in inception? What are the artifacts produced during inception?
- Consider the domain model diagram of course enrollment shown in Figure 1 and answer the following questions.

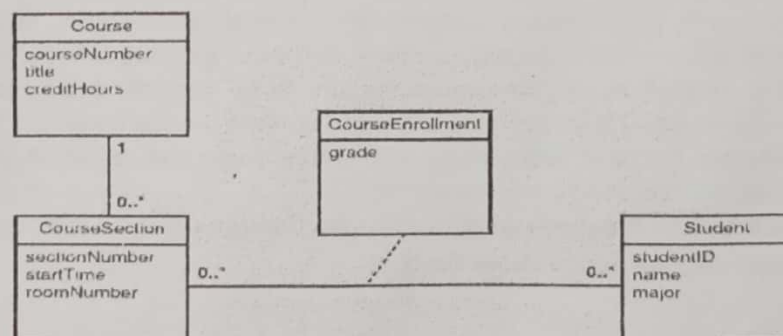


Figure 1

- Does this model allow a course to have more than one course section at a time?
- Does the model allow a course section to contain more than one student?
- Does the model allow a student to enroll in several sections of the same course and get a grade for each enrollment?

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- e) Again consider the domain model (Figure 1) shown in Part 'd', Add the following information to the domain model and redraw domain model.

A faculty member usually teaches many course sections, but some semesters, a faculty member may not teach any. Each course section must have at least one faculty member teaching it, but sometimes, faculty teams teach course sections. Furthermore, to make sure that all course sections are similar, one faculty member is assigned as course coordinator to oversee the course, and each faculty member can be the coordinator of many courses.

- f) Consider the following list of objects in the context of a transportation management system. For each object, state whether it represents a business object, a real-world object, or an event object.

- | | |
|---------------|----------------------|
| i. Vehicle | iv. Delivery |
| ii. Driver | v. Accident Report |
| iii. Shipment | vi. Fuel Consumption |

CLO # 2: Comprehend the advantages of consistent and reliable software design.

Question 2:

[2*6=12]

As a software engineer, you are responsible for developing a Job Application Management System. The system aims to streamline the process of applying for job positions within an organization and should provide functionalities to manage the applications efficiently. Candidates can belong to different categories, such as recent graduates, juniors, seniors, and other custom categories. Each candidate provides the following information:

- Name, Contact information (email, phone number, and address).
- Educational background (degree, major, institution), Years of experience
- Special skills or certifications (if any). Certifications have an expiration, a title, code and the date the candidate obtained them.

The system should allow the creation of job positions and record the following information: Job title, Job description, Required qualifications. Qualifications include a description and the number of years of experience required. Hiring manager (only one) responsible for the creation of job position. Candidates can submit applications for specific job positions. The Application should include: A cover letter, Resume, Two or many referees (person willing to answer questions about your history, qualifications, or skills at work). Referee name, address, relationship with the candidate, affiliation, phone number and email need to be tracked by the system. The system should track the application status, including stages such as: Application received, under review, Interview scheduled, offer extended, Rejected. The candidate can view the status of their application. For candidates, the hiring manager should facilitate the interview process and allow the scheduling of interviews. The hiring manager can make the final decision for each candidate. Once selected the candidate gets an offer. Hiring managers can provide feedback and ratings for candidates during the review and interview process.

- a) Identify the actors for the above mentioned application and draw the use case diagram.
- b) Draw the class diagram for the above scenario.

Best of luck!!!!!!!!!!