United International University (UIU)

Dept. of Computer Science & Engineering (CSE)

Final Exam   Trimester: Fall 2023   Marks: 40   Time: 2 Hours

Code: CSE 3411   Course Title: System Analysis & Design

"Any examinee found adopting unfair means will be expelled from the trimester / program as per UIU disciplinary rules."

Answer **1 to 3** from the following questions:

QUESTION 1   [CO3]   14

Consider the following scenario:

"**LearnSphere**" is an online platform designed for students to easily discover and enroll in a variety of courses, providing a comprehensive educational experience and additional features. This online-based learning platform provides a diverse range of courses, featuring engaging videos and supplementary materials, with options for both free and paid advanced courses.

To enroll in a course on LearnSphere, a student begins by browsing the platform's course catalogue to explore the available subjects and topics. Once they find a course of interest, they can click on it to access detailed information, including the course description, instructor details, and any prerequisites. If the course aligns with their preferences, the student can simply click on the "Enroll" or "Join" button, and they will be guided through a straightforward enrolment process. This typically involves confirming their decision, providing any necessary payment details if applicable, and gaining immediate access to the course materials.

Within this platform, instructors play a pivotal role in shaping the learning process. They provide course content, supplementing video lectures and study materials. As students' progress through the coursework, they have access to a wealth of resources, from multimedia presentations to reading materials, creating a holistic and immersive learning environment.

Instructors provide students with assignments to complete as part of the learning process. As students' complete assignments, instructors' step into the role of evaluators, offering constructive feedback through the platform's tools. This personalized feedback loop not only serves as a guide for improvement but also strengthens the collaborative nature of the learning community. Upon successfully completion of a course, students receive certificates as recognition of their achievement.

LearnSphere, the online learning platform, evolves into a captivating hub where fascinating lessons, entertaining assignments, and helpful teachers come together to create an enjoyable learning experience for all, no matter their background or goals.

Considering the above scenario answer the following questions:

a) Draw the Use Case Diagram. Depict at least one include/extend relation. [3]

b) Draw the Class Diagram and mention the rationale of selecting the classes for the given scenario. (classes can show the methods only). [3]

c) Depict a State Diagram on the activities of the instructors at LearnSphere platform. [4]

d) Draw a Sequence Diagram to enroll in a course in LearnSphere platform. Mention the symbols used in sequence diagram, along with their purposes. [4]

QUESTION 2 [CO4] 4

Suppose you, along with your three friends, found a great idea to implement as a Startup venture. To implement the idea, your team supposed to invest $5000, $4000, $1000 at 1st, 2nd and 3rd year respectively. In return as a revenue your team may earn $2000, $3000 and $6000 in 3rd, 4th, and 5th year respectively. Consider bank interest amount 10% per annum.

Determine whether the project in financially sustainable or not through the following two methods: [4]

    i.   Cash Flow

    ii.   Net Present Value

QUESTION 3 [CO3] 12

a) Mention an example of how inconsistent design elements can confuse users. [2]

b) Draw an UI Design for the Landing page of LearnSphere platform. Mention some UI design principles that you have followed here. [4]

c) "A good SRS must follow 3C properties - Completeness, Correctness, and Consistency – define and justify. [3]

d) An SRS document is a blueprint document for all the stakeholders participating in the system development life cycle – briefly justify the statement. [3]

QUESTION 4 [CO3] 10

a) Write down an SRS document and present it as a group having the following parts on your software project work covering: Introduction, System Study, System Analysis, Feature list fixation with Functional and Non-functional requirements, Different Feasibility Analysis, System design (UML diagrams), UI design through Figma software etc. **(no need to answer in examination, it has already been evaluated in classroom activities)**. [10]