SAMPLE FINAL EXAM

QUESTIONS

PART A. MULTIPLE CHOICE. Select one choice only.

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PART B. MODELING.

1. Draw a class diagram for the following system.
Consider a quiz grading system that grades student responses to quizzes. A quiz consists of questions. There are different types of questions, including matching questions, fill-in-the-blanks questions and multiple-choice questions. Students turn in submissions for quizzes, and the grading system grades them. Draw a UML class diagram for classes Quiz, Question, MatchingQuestion, MultipleChoiceQuestion, FillInTheBlanksQuestion,Student, and Submission.

2. Consider the following narrative:
"A Real Estate Inc. (AREI) sells houses. People who want to sell their houses sign a contract with AREI and provide information on their house. This information is kept in a database by AREI and a subset of this information is sent to the citywide multiple listing services used by all real estate agents. AREI works with two types of potential buyers. Some buyers have an interest in one specific house. In this case, AREI prints information from its database, which the real estate agent uses to help show the house to the buyer (a process beyond the scope of the system to be modeled).Other buyers seek AREI's advice in finding a house that meets their needs. In this case, the buyer completes a buyer information form that is entered into a buyer data base, and AREI real estate agents use its information to search AREI's data base and the multiple listing services for houses that meet their needs. The results of these searches are printed and used to help the real estate agent show houses to the buyer."

a. Draw a context-level DFD.
b. Draw a level 0 DFD.
c. Draw a level 1 DFD for one of the processes you have shown in level 0.

3. Consider the following components and their properties:

Part Name	Availability	Price
Part A	0.5	10
Part B	0.6	15
Part C	0.7	20

The system should include **at least 1** and **at most 2** of each component to work.

a. Design and draw the system with highest availability.
b. Calculate the overall system availability of the system you have designed in **(a)**
c. Design and draw the system with highest availability which costs at most 85 units of money.
d. Calculate the overall system availability of the system you have designed in **(c)**

4. Generate CRC cards for the following problem:
"Whenever new patients are seen for the first time, they complete a patient information form that asks their name, address, phone number, and brief medical history, which are stored in the patient information file. When a patient calls to schedule a new appointment or change in an existing appointment, the receptionist checks the appointment file for an available time. Once a good time is found for the patient, the appointment is scheduled. If the patient is a new patient, an incomplete entry is made in the patient file; the full information will be collected when they arrive for their appointment. Because appointments are often made far in advance, the receptionist usually mails a reminder postcard to each patient two weeks before their appointment."