Wednesday, 15 December 2021

EAST WEST UNIVERSITY
Department of Computer Science & Engineering
B.Sc. in Computer Science and Engineering Program
MidTerm II Examination, Fall 2021 Semester

Course:	**CSE347 Information System Analysis and Design, Section-1**
Instructor:	**Md. Mohsin Uddin, Senior Lecturer, Department of CSE**
Total Marks:	**40 (20 will be counted for final grading)**
Time:	**1 Hour and 20 Minutes**

Note: There are **Four** questions, answer all of them. Course Outcome (CO), Cognitive Level and Marks of each question are mentioned at the right margin.

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1. Based on your analysis of the following system description, **construct** an appropriate use case diagram for the system. In your diagram use appropriate notations and symbols to illustrate Generalization, Included, and Extended use cases. [CO2,C4, Marks:10]

"The print-on-demand service provides customers the possibility to print posters, flyers, or books on demand. The customer should be able to select a type of product (poster, flyer, or book), a desired quantity, and a paper type. In case a book has to be printed, additionally the customer can choose between hard cover and soft cover. Finally, the customer needs to provide a PDF file containing the desired content. In order for the customer to be able to place an order, he or she must have an account. The customer can create an account by choosing a username/password combination.
Furthermore, his or her address and credit card number can be linked to the account, which is required information when placing an order. Once a customer has provided the information for an order, the system checks if all required information is there, either given in the order (type of product, quantity, etc.), or in the account (address and payment information). If any information is lacking, the system will inform the customer that it needs to be added before the order can be placed. Once all information is in place, the order is placed, and the credit card information is sent to the bank for approval. If the bank approves the card, the order is finalized.
A printing agent is in charge of actually performing the printing. He or she inspects the provided PDF files of finalized orders. If a file does not meet the quality requirements, the customer will be informed about this, and the order is temporarily put on hold until the customer has provided a new PDF file. Finally, the administrator monitors if at all times, sufficient paper and ink stock is present. Whenever the amount of paper or ink is running low, an order must be placed at the appropriate supplier (either the paper or ink supplier)."

2. Consider the following simplified description of a system. **Construct** an appropriate class diagram. Add attributes and methods when necessary. You do not have to include getters and setters for attributes. In your diagram use appropriate notations, symbols, multiplicity to represent Generalization (class, abstract class/interface), Aggregation, Composition, and Association. [CO2,C4, Marks:10]

"A library system stores information of its users, its workers, the physical locations of its branches, and the media stored in those locations. The medias are to two types: books and videos. The library must keep track of the status of each media item: its location, status, descriptive attributes, and cost for losses and late returns. Books will be identified by their ISBN, and movies by their title and year. In order to allow multiple copies of the same book or video, each media item will have a unique ID number.

Users will provide their name, address, phone number, and date of birth when signing up for a library card. They will then be assigned a unique user name and ID number, plus a temporary password that will have to be changed. Checkout operations will require a library card, as will requests to put media on hold. Each library card will have its own fines, but active fines on any of a customer's cards will prevent the customer from using the library's services.

The library will have branches in various physical locations. Branches will be identified by name, and each branch will have an address and a phone number associated with it. Additionally, a library branch will store media and have employees. Employees will work at a specific branch of the library. They receive a paycheck, but they can also have library cards; therefore, the same information that is collected about customers should be collected about employees."

3. Based on the following use case description, **Construct** a UML Sequence Diagram. [CO2,C4, Marks:10]

"An invalid PIN extension is started from within a transaction when the bank reports that the customer's PIN number is invalid. The customer will be asked to re-enter the PIN number, and the request is sent to the bank again. If the customer fails four times to enter the correct PIN, the card will be retained in the machine, a screen is displayed informing the customer of this and suggesting he/she contact the bank, and the entire customer session is aborted. If the customer presses Cancel instead of re-entering a PIN, the original transaction is cancelled. On the other hand, if the PIN is successfully re-entered, it is used for both the current transaction and all subsequent transactions in the session. "

4. Based on the following use case description, **Construct** a UML Activity Diagram. [CO2,C4, Marks:10]

"A withdrawal transaction asks the customer to choose a type of account to withdraw from (e.g. checking) from a menu of possible accounts, and to choose a dollar amount from a menu of possible amounts. The system verifies that it has sufficient money on hand to satisfy the request before sending the transaction to the bank. (If not, the customer is informed and asked to enter a different amount.) If the transaction is approved by the bank, the appropriate amount of cash is dispensed by the machine before it issues a receipt. (The dispensing of cash is also recorded in the ATM's log.) A withdrawal transaction can be cancelled by the customer pressing the Cancel key any time prior to choosing the dollar amount."