



EAST WEST UNIVERSITY
Department of Computer Science & Engineering
B.Sc. in Computer Science and Engineering Program
Final Examination, Summer 2021 Semester

Course: CSE347 Information System Analysis and Design, Section-2
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 **five** questions, answer all of them. Course Outcome (CO), Cognitive Level and Marks of each question are mentioned at the right margin.

1. Based on the following use case description, **Construct** a UML Sequence Diagram [CO2,C4, (SD). 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.”

2. Each of the following scenarios represents a specific user interface design golden rule. [CO3,C3, **Identify** the specific golden rule for each scenario as well as **justify** your answers. Marks:6]

- a. “A set of applications (products) should implement the same design rules.”
- b. “The normal users should not aware about operating system, file management functions and other technology used in the system etc.”
- c. “Accomplish a system function (e.g. alt + P to invoke print function), the mnemonic should tied up with the option in such a way that it is easy to remember. e.g : ‘P’ for print.”

3. Consider the following simplified description of a High School Proposed Enrollment System. **Construct** Data Flow Diagram (DFD) upto level 1. [CO2,C4, Marks:7]

“First, the student must register his personal information and will be saved in the student record database. After the student’s registration, the staff will select one record of the student and will use it for enrollment. In the enrollment process, the staff will select subjects for the students in the school year. At the same time it will assign the teacher for the subjects. And then, the staff will create a schedule for the student. Finally, the staff will generate a report from enrollment and will provide the student with a copy of the printed report that the staff created.”

4. Consider the following component description of an e-commerce system. **Construct** a UML component diagram for the system. [CO3,C4, Marks:10]

“An e-commerce system is comprised of three related subsystems - Online_Storage, Accounting, and Warehouses. Online_Storage subsystem comprises of three components related to e-commerce - Authentication, Search_Engine, and Item_Cart. Accounting subsystem comprises of three components related to e-commerce - Orders, Customers, and Accounts. Warehouse subsystem has only one component named Inventory. Search_Engine component allows to search or browse items by exposing provided interface Product Search and uses required interface Search Inventory provided by Inventory component. Item_Cart component uses Manage Orders interface provided by Orders component during checkout. Authentication component allows customers to create account, login, or logout and binds customer to some account. Accounting subsystem provides two interfaces - Manage Orders and Manage Customers. Delegation connectors link these external contracts of the subsystem to the realization of the contracts by Orders and Customers components. Warehouses subsystem provides two interfaces Search Inventory and Manage Inventory used by other subsystems and wired through dependencies.”

5. Consider the following simplified description of deployment with hardware and software load balancing and clusters. **Construct** a deployment diagram for the system. [CO3,C4, Marks:7]

“A network load balancer is an appliance device that is used to split network load across multiple servers. A jetNEXUS ALB-X hardware load balancer combines the functions of OSI Layer 7 (Application Layer) load balancing, HTTP compression, SSL offload and content caching in one solution. It has 2 active hardware load balancers connected to 2 to 4 Sun Fire Servers. Each server has 3 instances of IBM WebSphere 7 J2EE application servers installed, so we have both vertical and horizontal clustering. When database connection is requested by application, Oracle run-time connection load balancing selects connection that belongs to the best instance from the connection cache provided by Oracle RAC (Real Application Clusters) database.”