Thursday, 20 January 2022

EAST WEST UNIVERSITY
Department of Computer Science & Engineering
B.Sc. in Computer Science and Engineering Program
Final Examination, Fall 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 **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. Consider the following simplified description of an Attendance Monitoring System. **Construct** Data Flow Diagrams (DFDs) upto level 1. [CO3,C4, Marks:10]

"The staff will register the student or teacher and be verified by the staff. The registration is only a one-time process for each student and teacher. After the registration, it will continue to log in and record for daily attendance. Reports can be generated daily or monthly according to the student's or teachers' requests."

2. Consider the following component description of an e-commerce system. **Construct** a UML component diagram for the system. [CO3,C4, Marks:12]

"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."

3. 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:12]

"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."

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

a. "Establish meaningful pre-selected options"

b. "The user should feel a sense of direct control to manipulate the objects."

c. "If some previous model in which the user is familiar, he/she always expect the same standards for other similar models."