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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- October 2018

B.Tech V Semester

COURSE CODE: Software Engineering

MAX. MARKS: 25

COURSE NAME: 10B11CI512

COURSE CREDITS: 4

MAX. TIME: 1Hr 30 Min

Note: All questions are compulsory.

1. [2 + 2 + 1 Marks] [CO 3]
 - a. An information system is to be developed to maintain information about assets owned by a utility company such as buildings, vehicles, and equipment. It is intended that this will be updatable by staff working in the field using mobile devices as new asset information becomes available. The company has several existing asset databases that should be integrated through this system. Suggest architecture for this asset management system. Justify?
 - b. Design the “provides” interface and the “requires” interface of a reusable component that may be used to represent a patient in the Patient Information system.
 - c. Explain the two forms of two-tier client-server architecture. Discuss their advantages and disadvantages.
2. [5 Marks] [CO 3]

Design Data Flow Diagram (DFD) for a Smart Home system (SHS). Smart Home contains multiple sensors which send data to a center processing unit. The centre processing unit processes the received data and makes decisions. The functions of a smart home are (a) SHS checks the motion sensor in the home and switches off and on the lights (b) SHS checks the outside temperature and set the temperature of the refrigerator and home accordingly (c) SHS monitors doors and windows of the home, and if anything happens it alerts police and emergency services.
3. [5 Marks] [CO 3]

Identify possible objects in the group diary and time management system. Develop an object-oriented design for the system. You may make any reasonable assumptions about the system when deriving the design. A group diary and time management system is intended to support the timetabling of meetings and appointments across a group of co-workers. When an appointment is to be made that involves a number of people, the system finds a common slot in each of their diaries and arranges the appointment for that time. If no common slots are available, it interacts with the user to rearrange his or her personal diary to make room for the appointment.
4. [2 + 2 + 1 Marks] [CO 4]
 - a. Draw a UML state machine for the controller in a home security system, which is responsible for monitoring various sensors around the perimeter of the house.
 - b. Provide examples of three data abstractions and the procedural abstractions that can be used to manipulate them.
 - c. Why is it expensive and risky to replace legacy systems with new systems?
5. [2 + 2 + 1 Marks] [CO 4]

Explain the following terms: a. Separation of concerns b. Refactoring c. Software Architecture