

Course Code:CS-303

Course Name: Software Engineering

Instructor Names: Engr. Abdul Rahman, Syeda Rubab Manzar, Ahsan Shah, Javeria Farooq

Student Roll No.

Section No:

Instructions:

- Return the question paper.
- Read each question completely before answering it. There are 3 questions and 2 pages.
- All the answers must be solved according to the sequence given in the question paper.
- Use sharp pencils to draw neat and clean diagrams where needed.

Time: 60 minutes.

Max Marks: 30 points

Question 1 [10 points]:

- A. The system architecture affects non-functional requirements of a system. The particular style and structure chosen for an application may therefore depend on the non-functional system requirements. Explain what design conflicts a software engineer may consider while developing an architecture for the system.
- B. OMG (Object Management Group) is known particularly for its efforts in defining standards for Object Oriented Development, UML, distributed applications, and MDA (Model Driven Architecture), and also enable powerful visual design, execution and maintenance of software and other processes. Draw the famous OMG's architecture diagram for the structure of a CORBA-based distributed application.

Question 2 [10 points]:

In some food processing industry, a warehouse is used to store different food items in different stores. There is a system to monitor the heat and humidity inside each store. Heat and humidity sensors are used, each sensor polls twice a second. When a sensor indicates a rise in heat or humidity, the system should trigger the alarm and turn on the cooling mechanism and dehumidifiers. The process model of this system is given in figure 1. Implement this warehouse monitor process using Java thread execution model and active object implementation.

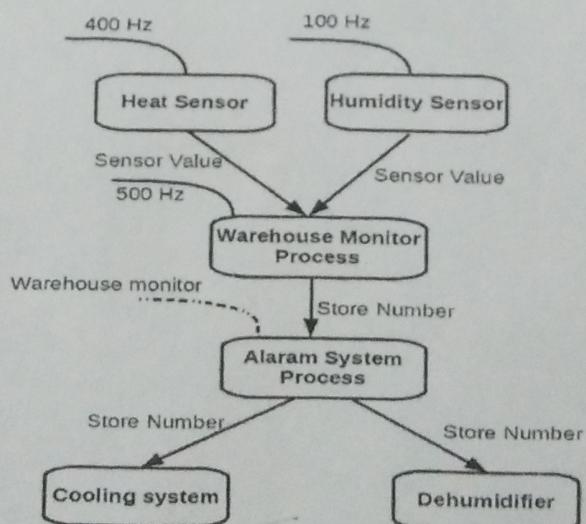


Figure 1

Question 3 [10 points]:

- A. You need to make a phone call only (not taking photos or listening to music!) to your friend. You first switch on the phone (assuming the phone is always switched-off after making a call). Then you perform the tasks necessary to make phone call and finally switch off the phone. For calling a person, you need to select the person's number to be called. Then, you dial the number using a "make call" button. Once your friend receives the call, you start conversation. Finally, after the conversation is completed you disconnect the call.
- For dialing a number, you either search the number from the contact list, if the number is not found you type a number. For finding the number from the contact list, you first open the contact list, find the name of the person, and select his/her name and the number is displayed on your screen.
 - Whereas when number does not exist in the mobile, you type a number by recalling number and entering it in the mobile phone and hence you make a call. Draw the hierachal task analysis (HTA) diagram on the given scenario.
- B. User interface (UI) design is an iterative process where users interact with designers and interface prototypes to decide on the features, organization and the look and feel of the system user interface. It is the most critical process for any software design. Identify and elaborate the core activities of user interface design and also illustrate the process of user interface design by a diagram.

Best of Luck!