Fall 2020 Mid-Term Assignment

Software Design & Architecture

Submitted To: Respected Aasma Khan

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ID# 13740

BS(SE) (6th Semester)

Fall 2020 Mid-Term Assignment

Course Name	Max. Marks	Max Duration	Date	Instructor
Software Design & Architecture	30	6 Days	13/4/2020	Aasma Khan

Question No: 01

MCQs **(1*15=15)**

1: UML activity diagrams are useful in representing which analysis model elements?

a) Behavioural elements
b) Class based elements
c) Flow based elements
d) Scenario based elements

2: Unified Modelling Language (UML) is a graphical language for

a) visualizing
b) specifying
c) none
d) both a and b

3: To support this module view which UML diagrams are used?

a) package diagram
b) component diagram
c) both a and b
d) activity diagram

4: Which of the following are the design concerns is design model?

a) Data
b) Interfaces
c) Architecture
d) a, b and c

5: Which of these are characteristics of a good design

a) exhibits strong coupling between its modules
b) implements all requirements in the analysis model
c) provides complete picture of the software
d) b and c

6: Which of the following is used to represent the architectural design of a software?

a) Dynamic models
b) Functional models
c) Structural models
d) All of above

7: Since modularity is an important design goal it is not possible to have too many modules in a proposed design

a) True
b) False

8: All architecture is design, not all design is architecture

a) True
b) False

9: Reusability of software modules refers to

a) the easiness of maintaining a software system
b) that its components can be easily reused in the development of other software systems
c) that can be easily transported from one hardware/software platform to another,
d) that a system performs user required functionality correctly

10: Cohesion is a qualitative indication of the degree to which a module

a) can be written more compactly
b) focuses on just one thing
c) is able to complete it functionality on time
d) measures the interconnection among modules in a software structure

11: Coupling is a qualitative indication of the degree to which a module

a) can be written more compactly
b) focuses on just one thing
c) is able to complete it functionality on time
d) measures the interconnection among modules in a software structure

12: Information hiding is a qualitative indication of the degree to which a module

a) can be written more compactly
b) focuses on just one thing
c) is inaccessible to other modules
d) measures the interconnection among modules in a software structure

13: Data oriented design is useful for systems that

a) process lots of data
b) process intensive systems
c) is used for the large systems that can be modularized
d) uses mathematical notation

14: Formal methods are useful for systems that

a) process lots of data
b) process intensive systems
c) is used for the large systems that can be modularized
d) uses mathematical notation

15: Component based methods are useful for systems that

a) process lots of data

b) process intensive systems

c) is used for the large systems that can be modularized

d) uses mathematical notation

Question No: 02 **(5+5+5=15)**

Case Study: Fire Alarm

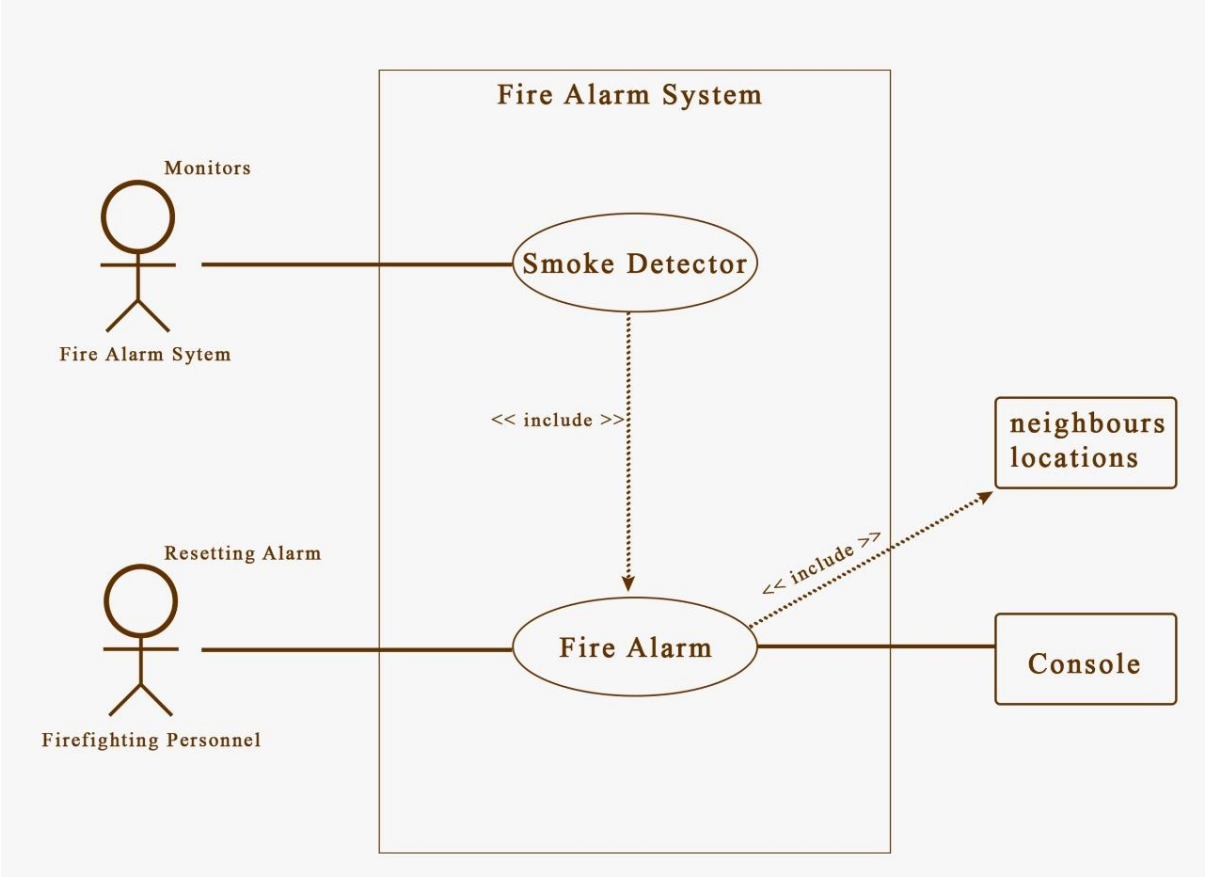
The owner of a large multi-stored building wants to have a computerized fire alarm system for his building. Smoke detectors and fire alarms would be placed in each room of the building. The fire alarm system would monitor the status of these smoke detectors. Whenever a fire condition is reported by any of the smoke detectors, the fire alarm system should determine the location at which the fire condition is reported by any of the smoke detectors, the fire alarm system should determine the location at which the fire condition has occurred and then sound the alarms only in the neighbouring locations. The fire alarm system should also flash an alarm message on the computer console. Fire fighting personnel man the console round the clock. After a fire condition has been successfully handled, the fire alarm system should support resetting the alarms by the fire fighting personnel.

a) Identify the functionalities of above fire alarm system.

Ans. The functionalities of the fire alarm system are as bellow:

1. The fire alarm system would monitor the smoke detectors.
2. If there is any fire condition near any smoke detector, the smoke detector will report that situation to the fire alarm system.
3. Then the location from where the sound detector has detected the fire condition will be determined by the fire alarm system.
4. When the location is identified by the fire alarm system it will ring the alarm only in the neighboring of that smoke detector which have identified the fire condition.
5. The fire alarm system have also to flash a message on the computer console about the fire condition.
6. After the ringing of alarm nearest firefighting personnel will go to the location and handle the situation occurred.
7. After the situation is successfully handled the firefighting personnel will reset the alarm.

b) Describe how the user employs the system and how the system provides services to the users i.e. give a scenario view using use case diagram.



c) Give a process view of the above scenario using an activity diagram.

Ans: (c)