

Uva Wellassa University, Sri Lanka
End Semester Examination – June 2009
CST 204-2 Software Engineering & Quality Assurance



Time: Two (02) hour

Total 06 Questions

Answer five (05) questions only

Q1

- a.) Name and describe 4 design patterns. [20 marks]
- b.) i.) You have been assigned to a system that generates reports of daily sales of a supermarket. A report generated on CSV format should be sent to SAP system that runs separately. The Excel formatted report should be mailed to the director board of the company. The HTML formatted report should be published to web viewers. Name suitable design pattern(s) to apply to this design and explain why you should use that/those. [10 marks]
- ii.) Explain using a class diagram how the design pattern(s) you name above will apply in designing the above system. [30 marks]
- c.) Describe four advantages of Extreme Programming.(XP) [20 marks]
- d.) Describe three XP practices to reduce defects in software products. [20 marks]

Q2

- a.) What is software testing? [10 marks]
- b.) Explain Component Testing and Integration Testing and state the instances where they are used. [30 marks]
- c.) Explain the White Box and Black Box methods of testing and state the instances where they are used. [30 marks]
- d.) Explain static and dynamic verification process. [30 marks]

Q3

Below is the draft specification for a proposed software system:

“A program is required to run the controller of a burglar alarm system. A typical system consists of a number of sensors connected by individual circuits to a central control box containing the controller. The control box has a simple keypad and display. Sensors include switches, heat detectors and motion detectors. Each sensor has an identification code which

can be read by the controller to identify the sensor.

The controller allows an operator to select which sensors are active and turn on or off the system. If a sensor is triggered when the system is active, the controller must activate the alarms (a siren and a bell) and display a message on the display panel indicating which sensor is involved. The operator must enter a security code before the system is turned on or off."

- a.) Create a detailed UML class diagram for the alarm program. Make sure each class is labeled with any key attributes or operations. [50 marks]
- b.) Create UML sequence diagrams to show how the program responds to an alarm being triggered, and how the operator can turn the system off. [50 marks]

Q4

- a.) Describe what are milestones and deliverables. [20 marks]

b.)

Task	Duration(Days)	Dependencies
T1	4	
T2	5	
T3	6	T2(M1)
T4	7	T1,T2(M2)
T5	6	T4,T3(M3)
T6	6	T2(M1)
T7	16	T1,T6(M4)
T8	6	T7(M5)
T9	3	T5,T6(M6)

Draw the activity diagram according to the task durations and dependencies shown in the table. [40 marks]

- c.) Explain risk management process. [40 marks]

Q5

Explain 4 of followings. Each carries 25 marks.

- a.) Software Quality Assurance
b.) Cleanroom software development process
c.) Testing workbenches
d.) Defect testing process
e.) Software inspection

Q6

- a.) Explain Requirement Engineering Process activities. [50 marks]
b.) What are the two levels of requirements and three types of requirements? [20 mark]
c.) Explain what should be validated in requirement validation step. [30 marks]