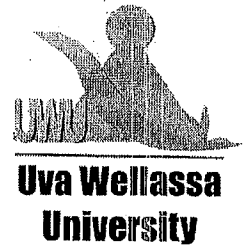


Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Computer Science and Technology
200 level 1st Semester Examination –May/July 2017
CST242-3 Software Engineering



Instructions to candidates

Duration: Three (03) hours

Number of Questions: Six (06)

Mark Allocation: 100

Answer all questions.

1.
 - a. How do you categorize software systems according to the controlling party of the specification? Explain each category. (4 mark)
 - b. How computer science and software engineering are related to each other? (3 mark)
 - c. Briefly explain the common challenges in software development process. (4 mark)
 - d. Explain why change is inevitable in all large software projects. (4 mark)

2.
 - a. You are required to develop an Enterprise Resource Planning (ERP) system to ensure smooth coordination among different departments of a furniture manufacturing company. The timely knowledge about the latest trends plays a key role in the success of the company's business. Therefore, the sooner the ERP system is deployed, the better it is.

Giving reasons for your answer, suggest the most appropriate generic software process model that might be used as a basis for the development of the above ERP system. (5 mark)
 - b. Describe the software process model that you have selected in **part 2.a** indicating its strengths and weaknesses. (8 mark)
 - c. "Incremental development model is less appropriate for real-time systems development". Do you agree with this statement? Justify your answer. (5 mark)

3.
 - a. To reduce the costs and the environmental impact of commuting, your company provides support for staff to work from home. Can agile methods for software development be used in your company? Justify your answer. (4 mark)
 - b. Pair programming is one of the Extreme Programming (XP) practices. What are the advantages of pair programming? (4 mark)
 - c. What are the advantages and disadvantages of software prototyping? (4 mark)



- 4.
- a. "Interviews are not good for understanding domain requirements". Do you agree with this statement? Justify your answer. (3 mark)
 - b. What are the potential problems that can arise if requirements are written in natural language? (3 mark)
 - c. Giving reasons for your answers, suggest which non-functional requirements are likely to be more critical for the following systems. (6 mark)
 - i. An internet service provider with thousands of customers.
 - ii. A computer controlled scalped used in keyhole surgery for a patient.
 - iii. An Internet-based personal finance management system.
 - d. What are the advantages and disadvantages of using layered architecture in software design? (4 mark)
 - e. What are the human factors need to be considered when designing a user interface? (4 mark)
- 5.
- a. Explain why program inspections are an effective technique for discovering errors in a program. (3 mark)
 - b. Explain the difference between "white box testing" and "black box testing" with respect to program testing. (4 mark)
 - c. Briefly explain the three (03) types of user testing. (4 mark)
 - d. Explain three (03) specific laws of software evolution as formulated by Lehman. (6 mark)
 - e. Under what circumstances might an organization decide to scrap a legacy system? (3 mark)
- 6.
- a. "A programming team has been asked to produce an object-oriented model for a given system. This model shows the classes that will be used and their interfaces. The team has been given a deadline to complete the model".
Is this model likely to be a milestone, a deliverable or both? Justify your answer. (3 mark)
 - b. Explain why the process of project planning is iterative and why a plan must be continually reviewed during a software project. (4 mark)
 - c. Briefly explain the risk management process. (6 mark)
 - d. What are the sub-models in COCOMO 2? (2 mark)