MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FOURTH YEAR FIRST SEMESTER EXAMINATION FOR DEGREE
OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

MAIN CAMPUS

SCS 402: SOFTWARE ENGINEERING

Date: 5th December, 2016 Time: 8.30 - 11.30am

INSTRUCTIONS:
- Answer Question ONE and any other TWO.

Question One

a) In your opinion why the savings in cost from reusing existing software is not simply proportional to the size of the components that are reused. [8 Marks]

b) A multimedia virtual museum system offering virtual experiences of ancient Greece is to be developed for a consortium of European museum, The system should provide users with the facility to view 3-D models of ancient Greece through a standard web browser and should also support an immersive virtua reality experience. What political and organizational difficulties might arise when the system is installec in the museum that make up the consortium? [8 Marks]

c) Giving reasons for your answer based in the type of system being developed, suggest the most appropriate generic software process model that might be used as basis for managing the development of the following system: [8 Marks]

    i.   A system to control anti-locking in a car.

    ii.   A virtual reality system to support software maintenance.

    iii.   A university accounting system that replaces an existing system.

    iv.   An interactive system that allows railway passengers to find train times from terminals installed in stations.

d) In software engineering, validating a software might be harder since client's expectation may be vague or unclear. Client's may use adjective for their expectation which may resulted in confusion or misunderstanding. [6 Marks]

Question Two

a) With examples outline at least two circumstances where you might recommend against software reuse. [6 Marks]

b) Explain the differences between verification and validation, and explain why validation is a particularly difficult process [6 Marks]

c) Your company uses a standard analysis method that is normally applied in all requirements analyses. In your work, you find that this method can not represent social factors that are significant in the system you are analyzing. You point this out to your manager, who makes it clear that the standard should be followed. Discuss what you should do in such situation. [8 Marks]

Question Three

a) In your view is it ethical to instrument software to monitor its use without telling end users that their work is being monitored. [6 Marks]

b) Explain why program inspections are an effective technique for discovering errors in a program and what types of error are unlikely to be discovered through inspections? [10 Marks]

c) Explain why it may be necessary to design the system architecture before the specifications are written. [4 Marks]

Question Four

a) Explain why the rapid delivery and development of new system is often more important to business than the detailed functionality of these systems [6 Marks]

b) Suggest at least two reasons why the productivity rate of programmers working as a pair is roughly the same as two programmers working individually. [6 Marks]

c) Extreme programming express user requirements as stories, with each story written on a card. List and explain at least two respectively, advantages and disadvantages of this approach to requirements description.   [8 Marks]

Question Five

a) A charity has asked you to prototype a system that keeps track of all donations they have received. This system has to maintain the names and addresses of donors, their particularly interest, the amount donated and when the donations was made, If the donation is over a certain amount, the donor may attach conditions to the donation (e.g. It must be spent on a particular project), and the system must keep track of these and how the donation was spent. Explain in details how you would prototype this system, nearing in mind that the charity has a mixture of paid workers and volunteers. Many if the volunteers are retirees who have had little computer experience. [12 Marks]

b) The LONTAR system has to include support for cataloging new documents where the system catalog may be distributed across several machines. What are likely to be the most important types of nonfunctional requirements associated with the cataloguing facilities? [8 Marks]