PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Final Examination: Semester 1 **Academic Year:** 2013-2014

Date: October 11, 2013 (2556) **Time:** 13:30 – 15:30

Subject Number: 241-438 **Room:** S102

Subject Title: SP (Software Development and Maintenance)

Name: _____ Student Number: _____

Exam Duration: 2 hours

This paper has 9 pages (including this page).

- Write the answers in the spaces provided in the examination paper.
- Clearly write your student number in the space provided at the top of each page. Write your name and student number in the spaces provided on this cover page.
- There are 60 marks total for this exam. This will contribute 20% of the course total.

Authorised Materials:

- Anything the student can carry (except communication devices.)

Instructions to Students:

- Attempt all 5 questions .
- Anything illegible is incorrect.
- Answer briefly where possible, essays are **not** required. There is no need to use all of the space provided for each answer!
- The marks allocated for each question are shown next to that question.
- *Answer questions in English.* Good English is **not** required.

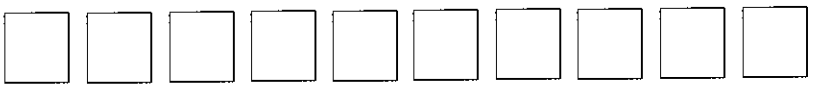
For marker's use only.

1	2	3	4	5	Total

Question 1. *(5 marks)*

Sort the following events (which are a subset of everything that would happen) into the order in which you would expect them to occur in a normal software development situation, and write the letters next to each event in order, first to last, in the boxes below:

A) Divide the task into smaller sub-tasks
B) Write user tutorial documentation
C) Link external function libraries
D) Investigate and understand the problem
E) Consult users about requirements
F) Compile the code
G) Request additional time to find the last bug
H) Document the internal interfaces
I) Choose programming language
J) Find a test case to reliably cause a bug



Question 2. *(10 marks)*

Which of the following statements are true?

[7 marks]

(Write **T** *or* **F** *in each box provided)*

A) Documentation is always required before a project is finished ☐

B) There are no programs without bugs ☐

C) There are no large programs that are known to have no bugs ☐

D) Optimisation is always required before a project is finished ☐

E) Building extra tools wastes resources ☐

F) Using higher level languages produces programs faster ☐

G) Using lower level languages produces faster programs ☐

Are any of the above questions neither always true or false? If so, which ones, and why?

[3 marks]

Question 3. *(35 marks)*

You are project manager for a large distributed software development project. You and your team have developed a prototype for the system and installed it for the users to try and determine whether the system designed meets their requirements. You have now received the report from the users. Apart from some minor user interface changes requested, which you decide will be easy to satisfy, the users are generally happy with the system, except for one major problem. When the system needs to access one of the servers to perform a query or update, the delays are much too long for the users, they need it to happen much more quickly. You call a meeting of your team to discuss this problem, and ask them what they believe should be done to make the system faster when it contacts the problem server. Their answers are:

a) No need to worry, the current system is just a prototype. It will be faster when the final code is all completed, the current test was just to discover whether the functionality is correct, and apart from the minor UI issues, it is, so we just proceed with the rest of the implementation.

b) We should replace the 100 Mbps network links with 1 Gbps network links, that will speed the network transfers and reduce the delay.

c) The server is too slow, we need to replace it with a newer faster system with more RAM so that it doesn't take so long to handle queries.

d) The server should be replicated. Queries and updates can then be divided amongst the servers which will reduce their load and enable faster responses.

e) We should move the part of the system that uses the network onto the client system, so network and server delays are eliminated.

A) As project manager, how do you respond to each of those suggestions? What do you tell each of the 5 team members (or ask them) to do?

[25 marks]

a)

b)

c)

d)

e)

B) After evaluating all of the suggestions, what is your decision as to how to proceed? Give reasons for your answer.

[10 marks]

Question 4. *(5 marks)*

A) For which kinds of programs do you believe most likely that you would use a parser generator to translate a grammar you write?

B) You are most likely to need to understand regular expressions for what kinds of tasks?

C) Using specialised programming systems (or languages) (such as logic programming, string processing, ...) is appropriate for .... ?

D) A half working existing solution to a current problem is useful because ? *(or if you prefer: "is not useful, because...")*

E) Which do you think is worse: a program that crashes frequently when used, or a program that completes but generates incorrect answers?

Question 5. *(5 marks)*

A WYSIWYG ("What You See Is What You Get") documentation system can be used to produce any documentation. Do you believe it is a good choice for producing documentation for software systems? Give reasons for your answer.