浙江大学2013–2014学年春夏学期

《软件工程》课程期末考试试卷

课程号：21120261，开课学院：计算机科学与技术

考试试卷：√A卷、B卷（请在选定项上打√）

考试形式：√闭、开卷（请在选定项上打√），允许带_____无_____入场

考试日期：2014年6月30日,考试时间：120分钟

诚信考试，沉着应考，杜绝违纪。

考生姓名：_____学号：_____所属院系：_____

题序	一	二	三	四	总 分
得分					
评卷人					

I. Please select the correct answers and *fill in the answer sheet*: (20 pts.)
Note:* Zero point *for a blank selection since there is at least one answer for each problem.

1)Which of the items listed below is NOT one of the software engineering layers? _____
A) Process B) Manufacturing C) Methods D) Tools

2) Which is NOT one of the key questions that is answered by each team member at each daily Scrum meeting? _____
A) What did you do since the last meeting?
B) What obstacles are you encountering?
C) What is the cause of the problems you are encountering?
D) What do you plan to accomplish at the next team meeting?

3) During project inception the intent of the of the tasks are to determine_____
A) basic problem understanding B) nature of the solution needed
C) people who want a solution D) none of the above

4) Which design model is analogous to the detailed drawings of the access points and external utilities for a house? _____
A) Architectural design B) Component-level design
C) Data design D) Interface design

5) Which of the following interface design principles reduces the user's memory load?

A) define intuitive shortcuts B) disclose information in a progressive fashion
C) establish meaningful defaults D) provide an on-line tutorial

6) The testing technique that requires devising test cases to exercise the internal logic of a software module is called _____

A) behavioral testing B) black-box testing C) grey-box testing D) white-box testing

7) Which of these roles is not usually assigned to members of the WebE team?

A) content developer B) marketing specialist C) Web master D) Web publisher

8) The W5HH principle contains which of the following questions? _____

A) Why is the system being developed? B) What will be done by whom?
C) Where are they organizationally located? D) How much of each resource is required?

9) The purpose of earned value analysis is to_____

A) determine how to compensate developers based on their productivity
B) provide a quantitative means of assessing software project progress
C) provide a qualitative means of assessing software project progress
D) set the price point for a software product based on development effort

10) Which of these are valid software configuration items?

A) software tools B) documentation C) executable programs D) test data

II. Please specify "T" (true) or "F" (false) for the following statements and *fill in the answer sheet.* (10 pts.)

1) Software engineering umbrella activities are only applied during the initial phases of software development projects.
2) Agile software engineering guidelines stress on-time delivery of an operational software increment over analysis and design.
3) The best way to conduct a requirements validation review is to send them to the design team and see if they have any concerns.
4) When using structured design methodologies the process of stepwise refinement is unnecessary.
5) Software configuration management is a set of tracking and control activities that are initiated when a software engineering project begins and terminate only when the software is taken out of operation.
6) One reason that version control is difficult for WebApps is that in an uncontrolled environment, you can have multiple authors making changes to the same files from multiple locations without any realizing it.
7) Use-cases can provide useful input into the design of black-box and state-based tests of OO software.
8) Software quality might be defined as conformance to explicitly stated requirements,

implicit requirements and standards.

9) The best reason for using Independent software test teams is that arguments between developers and testers are reduced.

10) White-box testing methods can be applied to testing the code used to implement class operations, but not much else.

III. Please give *brief* answers to the following questions: (20 pts.)

1. Are there any side effects if a software engineer is lured into taking a software-centric view instead of system-centric view in a computer-based system? (6 pts.)
2. What are the major differences between WebApp interface design and conventional software interface design? Please list at least two points and explain your reasons. (6 pts.)
3. Suppose the function is to calculate the sum of two positive rational numbers (有理数) and output the result in the simplest form of a rational number as "integer_part numerator/ denominator". Please design the test cases by applying equivalence partitioning and boundary value analysis technique. (8 pts.)

IV. Given a brief description of a Microwave Oven System. Please complete the requested modeling and testing tasks.

(50 pts.)

Software scope: A Microwave Oven System (*MOS*) controls the operations of a microwave oven through a panel of buttons. The user can select the power level (either half-power or full-power), then input the cooking time, and finally press *Start* to start the cooking operation. The food is cooked for the given time unless *Pause* is pressed. The user can press *Pause* again to resume cooking, or press *Cancel* to cancel the cooking. For safety reasons, the oven should not operate when the door is open and, on completion of cooking, a buzzer is sounded. To meet the personal requirement of users, *MOS* will log the users' most frequently used cooking time and set it as the default.

1. **Please draw the data flow diagram for MOS. (15 pts.)**
2. **Please give the state diagram for MOS. (15 pts.)**
3. **Please draw the software architecture of MOS. (10 pts.)**
4. **Please describe the testing strategy for MOS. (10 pts.)**

Answer Sheet

Part I				
1. B	**2. C**	**3. A,B,C**	**4. B**	**5. A,B,C**
6. D	**7. B**	**8. A,C,D**	**9. B**	**10. A,B,C,D**
Part II				
1. F	**2. F**	**3. T**	**4. F**	**5. T**
6. T	**7. T**	**8. T**	**9. F**	**10. T**

Part III and Part IV

Part III

Answer 1:

(1) If a software engineer is lured into taking a software-centric view instead of system-centric view in a computer-based system, he or she may neglect the requirements of the whole system.When the requirements change, due to the original **high coupling** among software modules and hardware of the system, it will **decrease the extendibility of the system.**

（2）The change will also lead the system to **be more difficult to maintain**.

Answer 2:

(1) WebApp interface design emphasizes more strongly on esthetics and layout.

(2) WebApp interface design considers more dynamic and real-time display content.

{Other points:

(3) WebApp interface should be more easy to understand and use without much instruction.

(4) WebApp interface design pay more attention to accommodate and support user-controlled navigation.

Answer 3: at least 4 cases must be designed

(1) result has integer part

(2) result has no integer part

(3) numerator and denominator has common factors and must be simplified

(4) result is an integer

(5) let numerator and denominator meet the boundary of long int

Part IV

1. Please draw the data flow diagram for MOS. (15 pts.)

Points are given according to whether the description is full and accurate. If the answer follows the DFD standard, 6 points is given, the other 9 points is depended on the contents.

2. Please give the state diagram for MOS. (15 pts.)

Format is 5 points, there are at least 5 states, waiting, cooking, enabled, disabled, done, 2 points for each state.

3. Please draw the software architecture of MOS. (10 pts.)

8 points is given if the function model diagram is written correctly. If the mapping from DFD to architecture is drawn, 2 points will been given.

4. Please describe the testing strategy for MOS. (10 pts.)

Unit testing, Integration testing, Interface testing, Configuration testing, Security testing, Stress testing, Reliability testing etc.