浙江大学 2004 —2005 学年秋学期期终考试

《 软件工程 》课程试卷

考试时间：__120__分钟　开课学院_　计算机学院_　专业__

姓名_____ 学号_____任课教师_____

题序	一	二	三	四	总分
评分					
评阅人					

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. Approximately which activity listed below will consume the least amount of time in a project? _____
   (A) analysis (B) design (C) coding (D) testing
2. The first step in project planning is to_____
   (A) determine software scope (B) select project team leader
   (C) determine the budget (D) determine the process model
3. Which factors are important when choosing a project team leader? _____
   (A) managerial identity (B) outstanding programming ability
   (C) problem solving ability (D) ability of communicating to other people
4. The importance of software design can be summarized in a single word: _____
   (B) accuracy (B) complexity (C) efficiency (D) quality
5. Which of the following interface design principles reduce the user's memory load? _____.
   (A) define intuitive shortcuts (B) disclose information in a progressive fashion
   (C) each application should have its own distinctive look and feel (D) establish meaningful defaults
6. Cohesion is a qualitative indication of the degree to which a module _____
   (A) can be written more compactly (B) is connected to other modules and the outside world
   (C) is able to complete its function in a timely manner (D) focuses on just one thing
7. Notations for depicting procedural detail include _____
   (A) box diagram (B) ER diagram (C) flow chart (D) decision table
8. The best reason for using independent software test teams is that _____
   (A) software developers do not need to do any testing
   (B) testers do not get involved with the project until testing begins
   (C) strangers will test the software mercilessly
   (D) the conflicts of interest between developers and testers is reduced
9. Which ones of the following are the primary benefits of object-oriented architectures? _____
   (A) improved execution performance (B) simplified interfaces
   (C) information hiding (D) easy component reuse
10. Which diagrams are to be built in an object-behavior model? _____
    (A) use-case (B) event trace (C) data flow (D) state transition

II. Please specify "T" (true) or "F" (false) for the following statements: (10 pts.)

1. Customers, end-users, practitioners, project managers and sales people are all considered as players in the software process.
2. Software configuration includes all information produced as part of the software process, such as programs, documents, data, and possibly some developing tools.
3. A good software is flexible, so it can easily accommodate changes brought up with the requirement change.
4. Software engineering includes three generic phases: software design, code generation, and software testing.
5. We should consider the implementation view first during software requirements analysis.
6. Class responsibilities are defined by both its attributes and operations.
7. Every computer-based system can be modeled as an information transform using an input-processing-output template.
8. Test cases should be designed long before testing begins.
9. Recovery testing is a system test that forces the software to fail in a variety of ways and verifies that software is able to continue execution without interruption.
10. Class testing for OO software is to test operations or algorithms individually for classes.

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

1. As a modern software project manager, what must you do to begin a project? Please briefly describe the major activities of project management. (6 pts.)
2. Please give explanations on why requirements elicitation is so difficult. (4 pts.)
3. Given a procedure for computing the average of positive numbers:

```
i=0;
sum=0;
input a;
do while a!=0 {
    if (a>0){
        i++;
        sum+=a;
    }
    input a;
}
```

```
if(i>0)
    average=sum/i;
else
    average=-999;
```

Please:

(1) draw the corresponding flow graph; (2 pts.)

(2) tell the cyclomatic complexity of the procedure; (2 pts.) and

(3) list all the independent paths for basis path testing. (2 pts.)

4. Please describe the OO recursive/parallel process model for developing software systems. (4 pts.)

IV. Given the description of the Football Player System, please analyze the system requirements and complete the requested models. (50 pts.)

Football Player System description: The system is to control the motion of robots in a multi-robot football competition. The software must be able to decode the images obtained by the cameras in the robots' eyes, analyze the information and judge the current state of the field (i.e. the positions of collaborators, rivals, and the ball). Then the system is supposed to send a signal of action (i.e. forward, backward, turn, or stop) to the engine. At the mean time, the software must be able to recognize foul plays. The system can be connected to the main server and be loaded with knowledge such as the rules and strategies of the competition.

1. Please draw the data flow diagram for the system. (12 pts.)
2. Please give the 4 most important data dictionary cards. (8 pts.)
3. Please draw the system state transition diagram. (10 pts.)
4. Please give the 4 most important CRC cards. (8 pts.)
5. Please draw the relationship diagram between objects according to the above 4 CRC cards. (12 pts.)

Answer Sheet

Part I				
1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
Part II				
1.	2.	3.	4.	5.
6.	7.	8.	9.	10.
Part III				
1.				
2.				

3.

4.

Part IV