四川大学期末考试试题（闭卷）

（2020~2021 学年第 1 学期）A 卷

课程号：**304064030** 课程名称：**现代软件工程** 任课教师：_____

适用专业年级：_____ 学号：_____ 姓名：_____

考生承诺

我已认真阅读并知晓《四川大学考场规则》和《四川大学本科学生考试违纪作弊处分规定（修订）》，郑重承诺：

1、 已按要求将考试禁止携带的文具用品或与考试有关的物品放置在指定地点；

2、 不带手机进入考场；

3、 考试期间遵守以上两项规定，若有违规行为，同意按照有关条款接受处理。

考生签名：

题号	一(20%)	二(10%)	三(20%)	四(24%)	五(26%)	六(0%)	七(0%)	八(0%)
得分								
卷面总分			教师签名		阅卷时间			

注意事项：1. 请务必将本人所在学院、姓名、学号、任课教师姓名等信息准确填写在试题纸和添卷纸上；

2. **请将答案全部填写在本试题纸上；**

3. 考试结束，请将试题纸、添卷纸和草稿纸一并交给监考老师。

一、单项选择题（本大题共 20 小题，每小题 1 分，共 20 分）

提示：在每小题列出的四个备选项中只有一个是符合题目要求的，请将其代码填写在下表中。错选、多选或未选均无分。

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

1. Which the following statement is incorrect （a）.
   a. Software maintenance is essentially same as hardware maintenance.
   b. Software is the product of human intellectual labor.
   c. Software does not wear out.
   d. software is a logical entity.
2. The software process framework defines （a） for software development.

a. activities and task sets
b. a sequence of activities
c. requirements of activities
d. a plan of activities

3. The software process flow includes linear process flow, (b), evolutionary process flow and parallel process flow.
   a. spiral process flow
   b. iterative process flow
   c. Increment process flow
   d. unified process flow
4. What are the four framework activities found in the Extreme Programming (XP) process model? (a)
   a. Planning, Design, Coding, Testing
   b. Communication, Analysis, Design, Coding
   c. Planning, Modeling, Coding, Deployment
   d. Analysis, Design, Coding, Testing
5. Which process model is appropriate when requirements are fuzzy? (b)
   a. Incremental Process Model
   b. Prototyping Process Model
   c. Spiral Process Model
   d. Concurrent Process Model
6. In Windows operating system, users can find the required application step by step through the "start" button. This design embodies (c).
   a. Establish meaningful defaults.
   b. The visual layout of the interface should be based on a real world metaphor.
   c. Disclose information in a progressive fashion.
   d. Maintain consistency across a family of applications.
7. In the context of object-oriented software engineering, a component contains (d)
   a. attributes and operations
   b. instances of each class
   c. roles for each actor (device or user)
   d. a set of collaborating classes
8. The best way to conduct a requirements validation review is to (d)
   a. examine the system model for errors
   b. have the customer look over the requirements

c. send them to the design team and see if they have any concerns
d. use a checklist of questions to examine each requirement

9. For purposes of behavior modeling , a state is any　　(c)
   a. consumer or producer of data.
   b. data object hierarchy.
   c. observable mode of behavior.
   d. well defined process.
10. Which of these is not an element of an object-oriented analysis model?　(c)
   a. Behavioral elements
   b. Class-based elements
   c. Data elements
   d. Scenario-based elements
11. What is the correct order in which software testing activities are organized?　(c)
   a. Unit Testing, Validation Testing, Integration Testing, System Testing
   b. Validation Testing, Unit Testing, Integration Testing, System Testing
   c. Unit Testing, Integration Testing, Validation Testing, System Testing
   d. System Testing, Unit Testing, Integration Testing, Validation Testing
12. When we design test cases according to activity diagram, we usually use basic path method. At this time, the coverage indicator(覆盖指标) for testing is: (a)
   a. 100% coverage of the basic path.
   b. 100% statement coverage and 75% decision coverage
   c. 100% path coverage
   d. 100% decision / condition coverage
13. The main work of requirement elaboration is:　(d)
   a. agree on a deliverable system that is realistic for developers and customers
   b. establish basic understanding of the project
   c. elicit requirements from all stakeholders
   d. create an analysis model that identifies data, function and behavioral requirements
14. Which of these work products are made in requirement elicitation:　(d)
   a. A statement of need and feasibility.
   b. A bounded statement of scope for the system or product
   c. A description of the system's technical environment.
   d. All of the above
15. The use of traceability tables helps to:　　(c)
   a. debug programs following the detection of run-time errors

b. determine the performance of algorithm implementations
c. identify, control, and track requirements changes
d. none of the above

16. The system specification describes the　(a)
a. Function, performance and constraints of a computer-based system
b. implementation of each allocated system
c. element software architecture
d. time required for system simulation

17. Which of the following is not one of the requirement classifications used in Quality Function Deployment (QFD)?　（ b）
a. exciting　　b. mandatory
c. expected　　d. normal

18. Which of the following is NOT an umbrella activity ? (a)
a. Construction
b. Technical reviews
c. Measurement
d. Risk management

19. Which design is equivalent to the floor plan of a house?　(a)
a. Architectural design
b. Component-level design
c. Data design
d. Interface design

20. What are the main advantages of bottom-up integration testing? (c)
a. The main decision points can be tested in advance.
b. you don't need to write a driver
c. there is no need to write stubs
d. no regression testing is required

二、判断题（本大题共 10 小题，每小题 1 分，共 10 分）

提示：正确打✓，错误打×。

1	2	3	4	5	6	7	8	9	10

1. Requirement engineering tasks are conducted to establish a solid foundation for design and construction. √

2. If past interactive models have created certain user expectations it is not generally good to make changes to the model. √
3. The output of each increment in an incremental development process should be a tested and is a working system. √
4. In a traditional software development process, the output of each stage is a product that can be verified against the output of the previous stage. √
5. When using structured design methodologies, the process of stepwise refinement is unnecessary. ×
6. Classes and components that exhibit functional, layer, or communicational cohesion are relatively easy to implement, test, and maintain. √
7. An objective for building an analysis model is to develop an abbreviated solution for the problem. ×
8. Exhaustive testing is impossible. √
9. Because the unit testing can capture all defects, there is no need for redundant system testing. ×
10. Boundary value analysis can only be used for white box testing ×

三、名词解释（本大题共 5 小题，每小题 4 分，共 20 分）

提示：解释每小题所给名词的含义，若解释正确则给分，若解释错误则无分，若解释不准确或不全面，则酌情扣分。

1. Software process

   A process is a collection of activities, actions, and tasks that are performed (----3 分)when some work product is to be created.（---2 分）
2. Pair programming

   XP recommends that two people work together at one computer workstation to create code for a story（----2 分）. This provides a mechanism for real-time problem solving (two heads are often better than one)（---1 分）and real-time quality assurance (the code is reviewed as it is created).（---1 分） It also keeps the developers focused on the problem at hand（----1 分）.
3. CRC model

   CRC model is a collection of standard index cards that represent classes（----2 分）. The cards are divided into three sections（---1 分）. Along the top of the card you write the name of the class. In the body of the card you list the class responsibilities on the left and the collaborators on the right（----2 分）.
4. Software Testing

答案（其一即可）：

（1）软件测试员的目标是尽可能早地找到软件缺陷（-----3 分），并确保其得以修复（---2 分）。

（2）[IEEE]使用人工或自动的手段来运行或测定某个软件系统的过程，（----2 分）其目的在于检验它是否满足规定的需求或弄清预期结果与实际结果之间的差别（----3 分）

（3）测试是以评价一个程序或者系统属性为目标的任何一种活动（---3 分）。测试是对软件质量的度量。（---2 分）

5. software requirements Specification (SRS)

a list of technical requirements（---2 分），SRS describes the function, interface and constraints of a system（---3 分）。

四、问答题（本大题共 3 小题，每小题 8 分，共 24 分）。

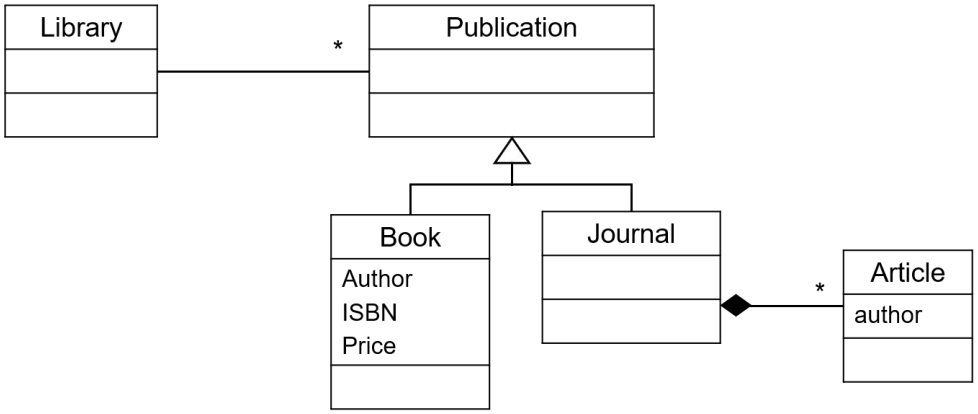
1. Explain what is wrong with the notion that computer software does not need to evolve over time.

Computer software must be revised as errors are discovered and corrected. （----2 分）Software must be updated to accommodate changes in the computing environment.（---2 分）Many times a customer will request changes to add new functions to an existing product or to accommodate changes in the business environment（---2 分）. Sometimes an older system will need to be engineered to provide benefits to the user in a modern context. The bottom line is that software that does not evolve will eventually become unusable. （---2 分）

2. According to the following description, draw the corresponding class diagram.

A library has many publications. These publications include books and journals. Each book has information such as author, ISBN number, price, etc. A journal contains multiple articles, each with authors.

Answer：



完整：--8 分；基本正确---6 分，不完整---4 分。可酌情给分

3. Someone says: Until I get the program running, I have no way of assessing its quality. Is that right? Why?

答案：

这种说法不对。（---2 分）

（1）有数据分析显示：需求阶段引入的缺陷占比最高，其次是设计，如果不在早期发现修复这些缺陷，则会导致修复费用的飙升，并影响软件的质量和交付时机，所以不能等到后期才开始进行质量评估。（---3 分）

（2）软件工程中提供有手段可以在项目的早期进行质量评估活动，即“技术评审”，该方法被称之为“质量过滤器”，是比动态测试更为有效的一种发现缺陷的质量保证手段，它可以发现需求和设计的缺陷。（---3 分）

五．分析设计题（本大题共4小题，共26分）。

You have been asked to design a game : Rock, Paper, Scissors

Scissors　　Rock　　Paper

Requirement specification:

- The user may select any pattern in rock, scissors, paper
- The program (AI) randomly generates a pattern in rock, scissors, paper
- The game can automatically judge the winner and the winner wins 10 scores, then the user and program (AI)'s total scores will be displayed on the screen
- There are 10 rounds of the game. When the game is over, If the user final score is higher than any score in the history top 10, a dialog box pops up asking the user to enter a user name and then a list will pop up and shows the user rank (keep only the top 10)

Please answer the following questions:

1.Design all the User Interfaces of this game。（8 分）

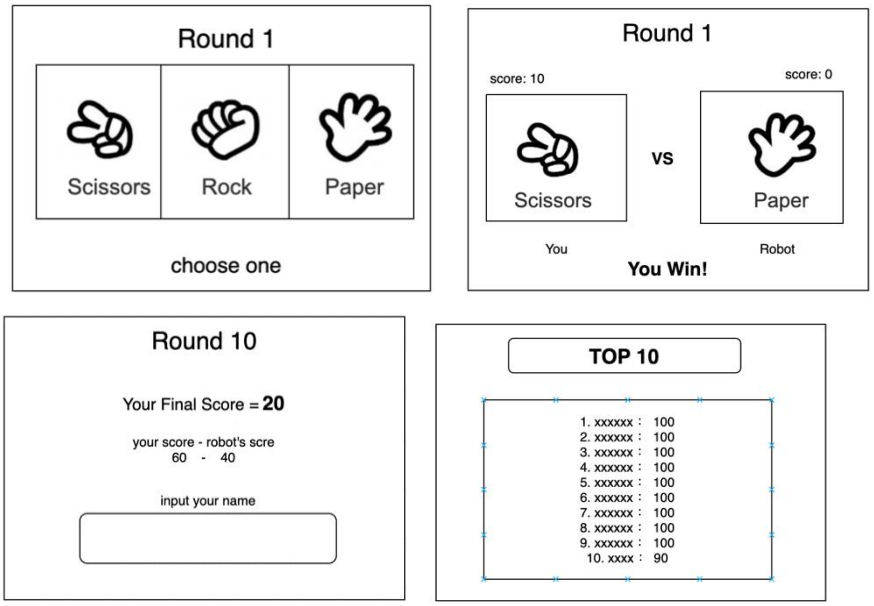
2.Describe the data object of this game。（6 分）

According to the definition of module CountScore, complete all the following designs:
Module name: CountScore(UserChooseID，AIChooseID)
Input Paramater1: UserChooseID(R:Rock, P:Paper, S:Scissors）
Input Paramater2: AIChooseID(R:Rock, P:Paper, S:Scissors）
Return Value: the Score. If Input（R,R） No winner , RetrunValue=0；
If Input（R,P） the winner is the programAI, ReturnValue=-10；
If Input（S,P） the winner is the User , ReturnValue=10；
…….

3.Draw the program flow chart of this module with simple condition (not need to describe the program code of this module) （8 分）

4.Compute Cyclomatic complexity（环路复杂度）of this module.（4 分）

1)　用户界面。非标酌情给分



2）数据模式：酌情给分

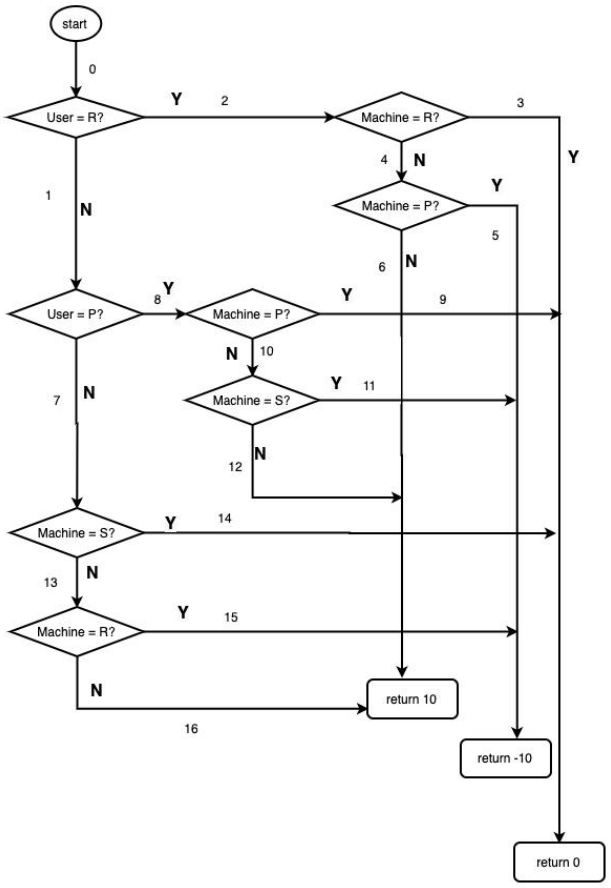
Data object1：the Pattern of Rock, Paper, Scissors

No.,　PatternID(R,P,S),　PatternImage(R,P,S)

Data object2：the list of user rank

No.,　Username,　Score

3）流程图。酌情给分



(4）V(G)＝8+1=9　　正确得 4 分