装 订 线

任课教师：

学号：

姓名：

班级：

西 安 电 子 科 技 大 学

考试时间 120 分钟

试 题

题号	I	II	III	IV	总分
分数	30	10	30	30	

1. 考试形式：闭卷☑ 开卷☐ A 卷
2. 考试日期： 年 月 日(答题内容请写在装订线外)

I. Single Choice (2 * 15 = 30 points)

1. Software is a set of instructions (programs)，(B) , and documents。

   A. test B.data C. architectures D. process

2. Software engineering means the application of a systematic, measureable and (D) approach to the development, operation, and maintenance of software. That is, the application of engineering to software.

   A. readable B. traceable C. reliable D. disciplined

3. The (A) is the company, organization, or person who is paying the software system to be developed.

   A. customer B. developer C. coder D. user

4. A (B) is the completion of an activity-a particular point in time

   A. activity B. milestone C. timetable D. schedule

5. If you are developing a software system, which is relatively small in size, and the requirements are poorly defined. (A) would be the most appropriate process model for this type of development?

   A. prototyping B. waterfall C. spiral D. V-model

6. A requirement is an (B) of software behavior.

   A. product B. expression C. life cycle D. ability

7. A quality requirement, or (C) describes some quality characteristic that the software solution must possess.

   A. Security B. design constrains

- A data-flow diagram (DFD) models functionality and the flow of data from one function to another

C. non-functional requirement D. functional requirements

8. (B) models functionality and the flow of data from one function to another.

A.State machine B. Data-flow diagram

C. Entity-relationship diagram D. Event trace

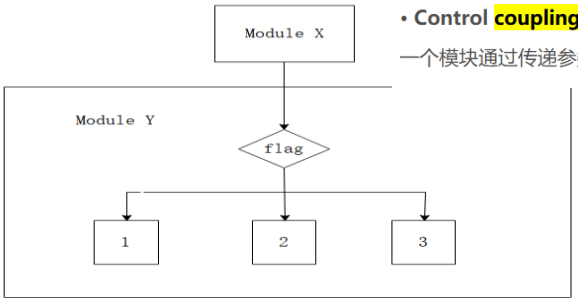
9. The quality of (A) reflects the ease with which a user is able to operate the system.

A. usability B. robustness C. reliability D. performance

10. There are six types of coupling, they are content coupling, common coupling, stamp coupling, data coupling, control coupling and (D).

A. local variable B. global variable C. independence D. uncoupled

11. As shown in the following figure, Module X passes a parameter "flag" to control the behavior of Module Y, then these two modules are connected by ( ) coupling. D



• Control coupling 控制耦合

一个模块通过传递参数，或者函数的返回值来控制另一个模块的行为

A. stamp B. data C. content D. control

12. A (A) test evaluates the system to determine if the functions described by the requirements specification are actually performed by the integrated system.

A. function B. volume C. stress D. performance

13. A (A) test is run to make sure that the system still functions as it should.

A. installation B. white box C. acceptance D. beta test

14. The figure below shows the component hierarchy of a software system. Use this figure to identify the testing strategy indicated by the sequences given. The ";" is used between test sets and each test set is represented as a comma-separated list. For example, the sequence {C};{C, H} means that component C were tested first. Then, components C, and H were tested. For the following test sequence: {F};{G};{H};{I};{J};{K};{B,F,G};{C,H};{D,I};{E,J,K};{A,B,C,D,E,F,G,H,I,J,K}, (A) testing is applied.

A. bottom-up B. top-down

C. sandwich D. big-bang

15. To control the day-to-day system functions, we on the maintenance team respond to problems from faults. This kind of maintenance is called (D) maintenance.

A. prevent B. perfect C. adaptive D. corrective

(2) V模型:

The V model makes more explicit some of the iteration and rework that are hidden In the waterfall model

(1) Bottom-up integration

自底向上增加新模块

先测试软件最底部的各个独立组件再向上测试集成的组件。测试每一个集成的组件都要连带其下所属的底层组件一并测试一遍，即将他们看作一个整体进行测试。

需要注意的是这种测试需要为编写驱动（driver components）

In bottom-up integration test, we should develop a component driver to passes a test case to the component to be tested

1.3.2 过程的质量

有很多活动会影响到最终的产品质量。只要有活动出了差错，产品的质量就会受到影响。因此，许多软件工程师认为开发和维护过程的质量与产品的质量是同等重要的。对过程进行建模的一个优点是，我们能够研究它，并寻找方法对它加以改进。例如，我们可以提出下面的问题。

装 订 线

任课教师:

装 订 线

学号:

装 订 线

姓名:

装 订 线

班级:

II. T(True) or F(False) (1*10 = 10 points)

1.(F) The V model makes more explicit some of the risk and risk control that are hidden in the waterfall model

2.(T) Any work done to change the system after it is in operation is considered to be maintenance.

3.(T) White-Box test methods are usually used to test program's internal structures.

4.(F) In Bottom-Up integration test, we should write a stub component..

5.(F) When we evaluate the quality of a software, the product value is always less important than the process value and the business value.

6.(T) A requirement is an expression of desired behavior.

7.(T) "The system should be easy for new customers to use" is NOT a good requirement.

8.(T) Designing software is an intellectually challenging task and an iterative process.

9. (T) The objective of a software testing is NOT to prove the correctness of the software.

10.(F) White box test method is often used during system testing.

III. Questions（6*5= 30 points）

1、 Describe the Waterfall model and its advantages and disadvantages.

- 优点:

模型简单，客户和开发人员容易理解

为项目提供了按照阶段划分的检查点

精确定义了每位开发人员的不同职能

可强迫开发人员采用规范化的方法

说明了每个主要阶段完成的里程碑或可交付产品

概念：瀑布模型包括**需求分析，系统设计，程序设计，编码，单元和集成测试，系统测试，验收测试以及运维**步骤。

The waterfall mode include **requirement analysis, system design, program design, coding, unit & integration testing, system testing, acceptance testing ,and operation & maintenance** steps.

- 缺点:

由于瀑布模型几乎完全依赖于书面的规格说明，很可能导致最终开发出的软件产品不能真正满足用户的需要

只适用于项目开始时需求就已经确定的情况，无法应对开发过程中需求的变更

将软件开发视为一个制造过程而不是一个创造过程

往往需要很长时间才能得到最终产品

2、 Briefly describe the functions of four core constructs of Data Flow Diagram (DFD).

这是刘伟ppt的原话:

- A data-flow diagram (DFD) models functionality and the flow of data from one function to another
  - A buble represents a *process*
  - An arrow represents *data flow*
  - A *data store*: a formal repository or database of information
  - Rectangles represent *actors*: entities that provide input data or receive the output result

气泡：表示过程

箭头：表示数据流

数据存储：正式的资料档案库或者信息数据库

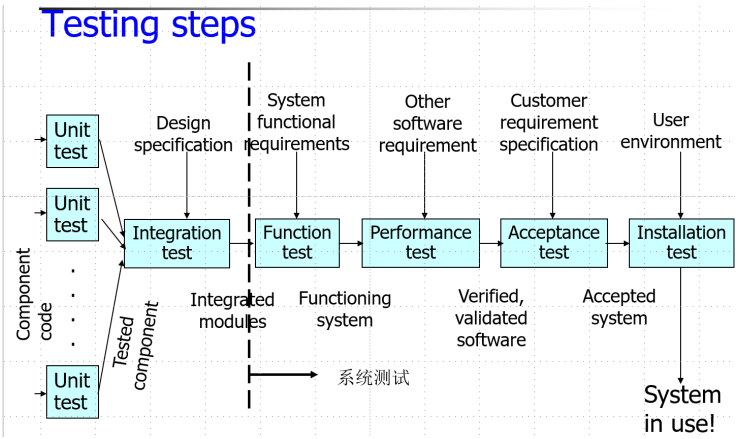
矩形：参与者，提供输入数据或接受输出结果的实体

3、 Briefly describe functions of the Filer and the Pipe in Pipe-Filter architecture style, respectively.

每个模块都有一组输入与输出，每个模块从输入端接收数据流，内部处理后按照标准顺序将数据送至输出端，这种模式成为过滤器，而各个过滤器之间连接的导管，起数据传递的作用，称为管道。

4、 Describe the steps in the testing process.

第四题的答案好像就是第五题的题干？



5、 Briefly describe the concept of unit test, integrating test, and system test.

1. 单元测试：测试单个的模块
2. 集成测试:测试集成的模块
3. 系统测试(包括功能测试、性能测试、验收测试和安装测试)，测试整个软件系统

IV. Problem Solving（15 * 2= 30 points）

1、Figure 1 is an activity graph. Find out the critical path(s).

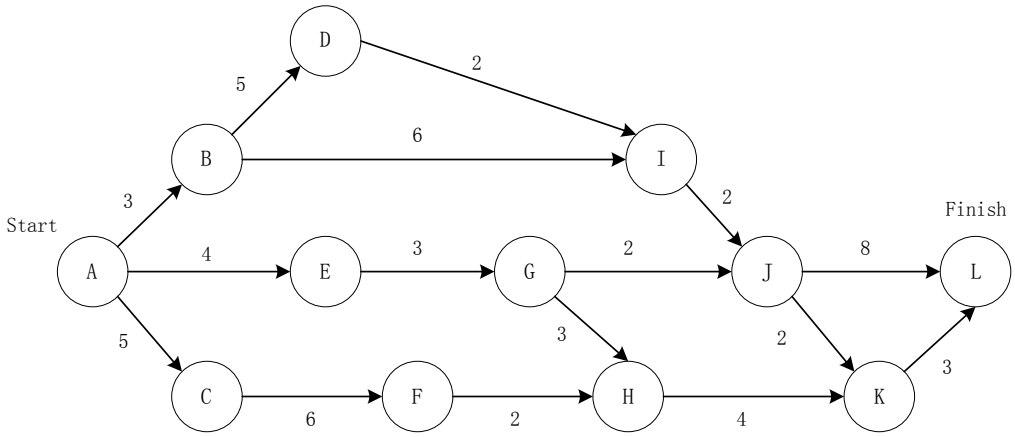


Figure 1 An Activity Graph

注意可能多条路径：
ACFHKL（20）、ABDIJL（20）

2、Figure 2 is a program's logic flow, give out:

(1) the test case for STATEMENT TESTING（语句测试）, BRANCH TESTING（分支测试）,

(2) the test path for PATH TESTING（路径测试）.

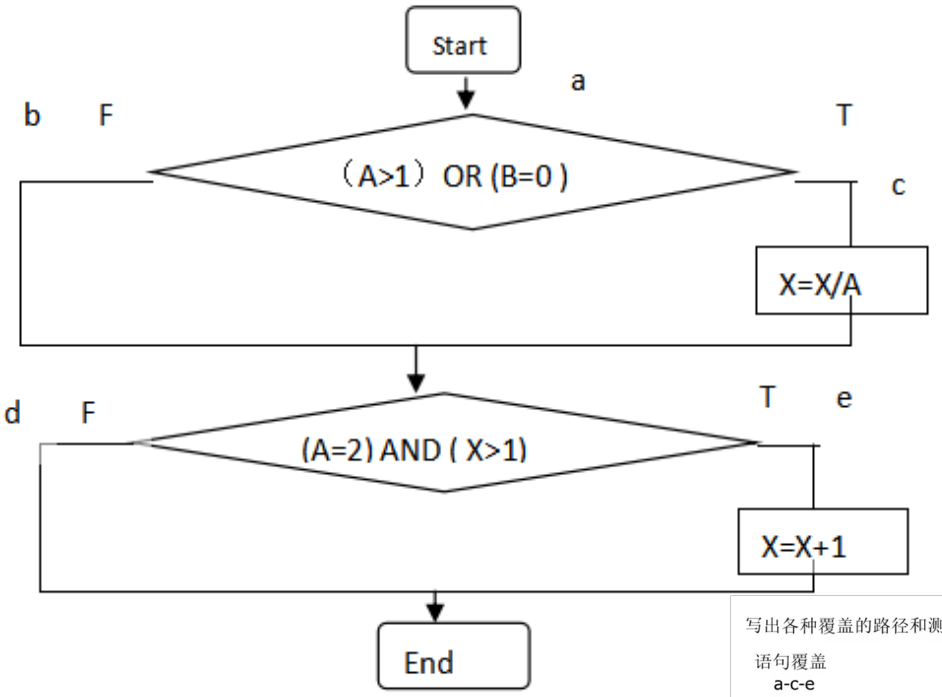


Figure 2. Program Logic Flow