装订线

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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：2020 年 8 月 21 日(答题内容请写在装订线外)

12/6

15:35 – 16:07 32min

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

1. Software is a set of instructions (programs), (A), and documents。
   A. data B. test C. process D. architectures
2. Software engineering means the application of a systematic, measureable and (B) approach to the development, operation, and maintenance of software. That is, the application of engineering to software.
   A. reliable B. disciplined C. readable D. traceable
3. The (C) is the company, organization, or person who is building the software system for the customer.
   A. user B. coder C. developer D. designer
4. An (B) is part of the project that takes place over a period of time.
   A. milestone B. activity C. schedule D. timetable
5. We can think of a set of ordered tasks as a process, a series of steps involving constraints (A) and resources that produce an intended output of some kind.
   A. steps B. testing C. coding D. activities
5. A requirement is an expression of software (C).
   A. ability B. lifecycle C. behavior D. product

7. Design is the creative process (A) of figuring out how to implement all the customer's requirements; the (B) plan is called the design.
   A. resulting B. final C. document D. product
8. In client-server architecture, the (B) component offer services, and the client access them using a request/reply protocol.
   A. peer B. server C. pipe D. filter
9. The (A) model is a standard for software process quality.
   A. CMM B. CPM C. ROI D. WBS
10. Design principles are guidelines for (A) our system's required functionality and behavior into modules.
    A. decomposing B. testing
    C. understanding D. reading
11. Modularity, also called (A), is the principle of keeping separating the various unrelated aspects of the system.
    A. separation concern B. process concern
    C. data concern D. performance concern
12. In pipe-and-filter style, the filter functions is to pass the input data through a sequence of data-transforming component, and the (B) simply transmit data from one filter to the next without modifying the data.
    A. filter B. pipe C. peer D. client
13. The (A) method is used to express the software requirement.
    A .use case diagram B. beta test
    C. black box D. white box
14. No matter how what language is used, each program component involves at least three major aspects, (D) algorithms and data structures.
    A. parameters B. units C. interfaces D. control structures

D

15. Stress or overload fault occur when the data structures are filled past their specified (B).
    A. function B. volume C. performance D. capacity

需求规格说明通常详细说明系统的用户数目、设备数目和通信需要。通过使用这些信息，设计人员通常对系统特性进行剪裁，使得系统的处理不超过需求描述中的最大负载。这些特性在程序设计中表现为对队列长度、缓冲区大小、表的维度等的限制。当填充这些数据结构时如果超过了它们规定的能力，压力故障（stress fault）或过载故障（overload fault）就发生了。

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

1. (T) When the process involves building of some product we sometime refer to the process as life cycle.
2. (F) The critical path is a path that the slack time as every node is non-zero.
3. (F) DFD is used in the stage of software testing.
4. (T) Any work done to change the system after it is in operation is considered to be maintenance.
5. (F) In acceptance test stage, an in-house test is beta test, and the alpha test is out-house test.
6. (T) Software Requirement Specification is read by developer.
7. (T) Head Comment Block is a descriptive material written directly within code.
8. (F) Black-Box test methods are usually used to test program's internal structures.
9. (T) A WHILE-DO construct do not wear out after 10000 loops, and the semicolons do not fall off the end of statement.
10. (T) In Bottom-Up integration test, we should write driver components.

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III. Questions（6 *5= 30 points）

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

2、 Briefly describe the functions of three core constructs of ERD (Entity Relation Diagram).

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

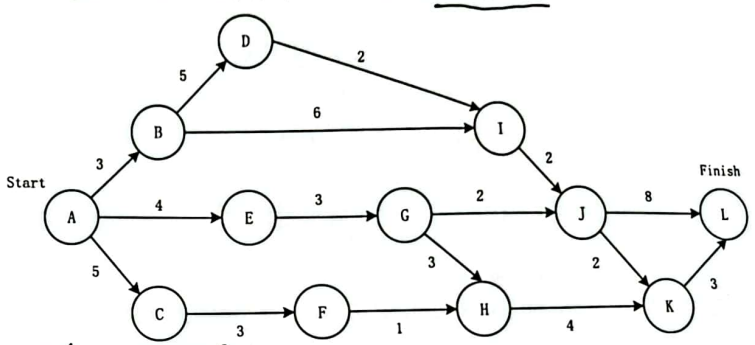
4、 Give out the contents of Head Block Comment.

5、 Briefly describe the concept of corrective maintenance.

5. 答：纠正性维护：指已经在维护中发现代码错误等问题，将其纠正过来的维护。不对后续产生不良影响，及时纠正错误。
为了控制日常系统功能，维护团队对故障引起的问题做出响应。这种维护称为纠正性维护。

IV. Problem Solving（10 * 3= 30 points）

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



1.解 ABDIJL 3+5+2+2+8=20
AEGJL 4+3+2+8=17
ACFHKL 5+3+1+4+3=16

Figure 1 An Activity Graph

∴ 关键路径为 A→B→D→I→J→L

2、Figure 2 is the flow chart of a component. Give out the test case for the branch test.

2.解 分支测试用例
① T_1T_2： A=6 B=8 ~~X=12~~ X=12
② F_1F_2： A=1 B=1 ~~X~~ X=0

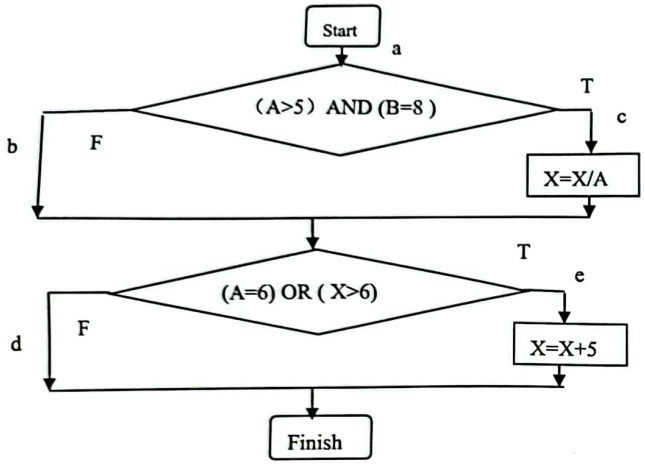
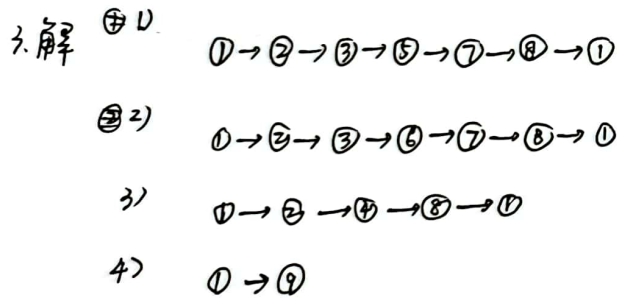


Figure 2 A Flow Chart

3、Figure 3 is the control flow of a component. Find out all the paths of path testing.



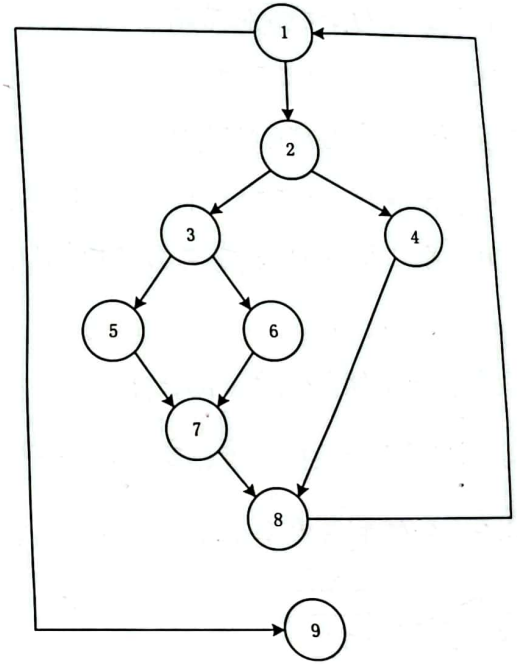


Figure 3 A Control Flow of a Component

1.

答：瀑布模型：包含需求分析、系统设计、程序设计、编码、单元/集成测试、系统测试、验收测试、运维步骤的模型。

优点 ① 强迫开发人员使用规范化方法。

② 各阶段有必须提交的文档。

③ 各阶段交付的产品必须经过验证。

缺点 ① 由于实际依照规格化文档说明，可能不能满足用户的真正需求。

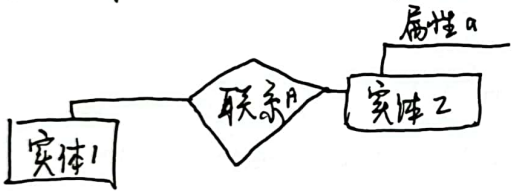
② 只适用于在项目开始需求就已确定的产品。

2.

答：① 实体：实体是产生行为，相互发生关系的主体。 现实世界中有共同属性行为的对象集合，矩形表示

② 属性：属性是实体具有的一些特质，更好表征实体情况。 注释在实体上来描述数据或性质与实体的关系

③ 联系：联系是表示实体间关系的纽带，通常是对象间的行为。 两实体间的纽带(边)，边上的菱形注明联系类型



3.

答：① 过滤器：将管道传输来的数据编译后输出给管道。 对数据进行处理的模块

The filter functions is to pass the input data through a sequence of data-transforming component. 传递数据的通道(支持并行)

② 管道：仅传输数据，输入输出流动媒介。

The pipes simply transmit data from one filter to the next without modifying the data.

4.

答：头注释块

① 创建作者
② 创建时间/日期
③ 项目名称
④ 开发环境(及软件设备)
⑤ 功能说明
⑥ 适用的标准，版权
⑦ 各部分作用

① 组件名称
② 组件编写者
③ 组件在一般系统设计中的位置
④ 编写和修订组件的时间
⑤ 组件的功能和作用
⑥ 组件是如何使用其数据结构、算法和对应到流程的