

一、选择题（每小题3分，共30分，可能单选或多选）

1.1 Umbrella Activities may include:

- A. Technical reviews;
- B. Software configuration management;
- C. Reusability management;
- D. Risk management in development process。

1.2 A process adopted for one project might be significantly different than a process adopted for another project. Among the differences are:

- A. Overall flow of activities, actions, and tasks and the interdependencies among them;
- B. Degree to which actions and tasks are defined within each framework activity;
- C. Degree to which work products are identified and required;
- D. Manner in which quality assurance activities are applied;
- E. Overall degree of detail and rigor with which the process is described;
- F. Degree to which the customer and other stakeholders are involved with the project;
- G. Level of autonomy given to the software team。

1.3 WebApps包括以下哪些典型特征：

- A. Network intensiveness
- B. Concurrency
- C. Unpredictable load
- D. Performance
- E. usability
- F. Availability
- G. Data driven
- H. Security.

1.4 Unfortunately, there is sometimes one additional characteristic that is present in legacy software-----poor quality. Legacy systems sometimes have :

- A. inextensible designs;
- B. Convoluted (复杂的) code;
- C. Poor or nonexistent documentation;
- D. No configuration management;

1.5 在需求调研中 (requirements elicitation) , 对于一个较小的项目, 需求调研的任务集 (task set) 可能包括:

- A. Make a list of stakeholders for the project
- B. Invite all stakeholders to an informal meeting
- C. Ask each stakeholder to make a list of features and functions required
- D. Discuss requirements and build a final list
- E. Prioritize requirements
- F. Note areas of uncertainty

1.6 Experts suggest some selection characteristics that should be used as you consider each potential class for inclusion in the analysis model and a potential class should satisfy all (or almost all) of these characteristics:

- A. Retained information
- B. Needed services
- C. Multiple attributes
- D. Common attributes
- E. Common operations
- F. Essential requirements

1.7 Software quality attributes include:

- A. Functionality
- B. Usability
- C. Reliability
- D. Testability
- E. Performance
- F. Maintainability

1.8 设计建模 (Design Modeling Principles), 包括概要设计建模和详细设计建模, 以下哪些是设计建模的基本原则 (principles) :

- A. Design should be traceable to the requirements model.
- B. Always consider the architecture of the system to be built.
- C. Design of data is as important as design of processing functions.
- D. Interfaces (both internal and external) must be designed with care.
- E. Component-level design should be functionally independent.
- F. Components should be loosely coupled to one another and to the external environment.
- G. The design should be developed iteratively. With each iteration, the designer should strive for greater simplicity

1.9 开发一个项目，定义过程框架活动流（the sequence of framework activities）或选择过程模型时往往需要借助process pattern来帮助，这属于下列哪种pattern？

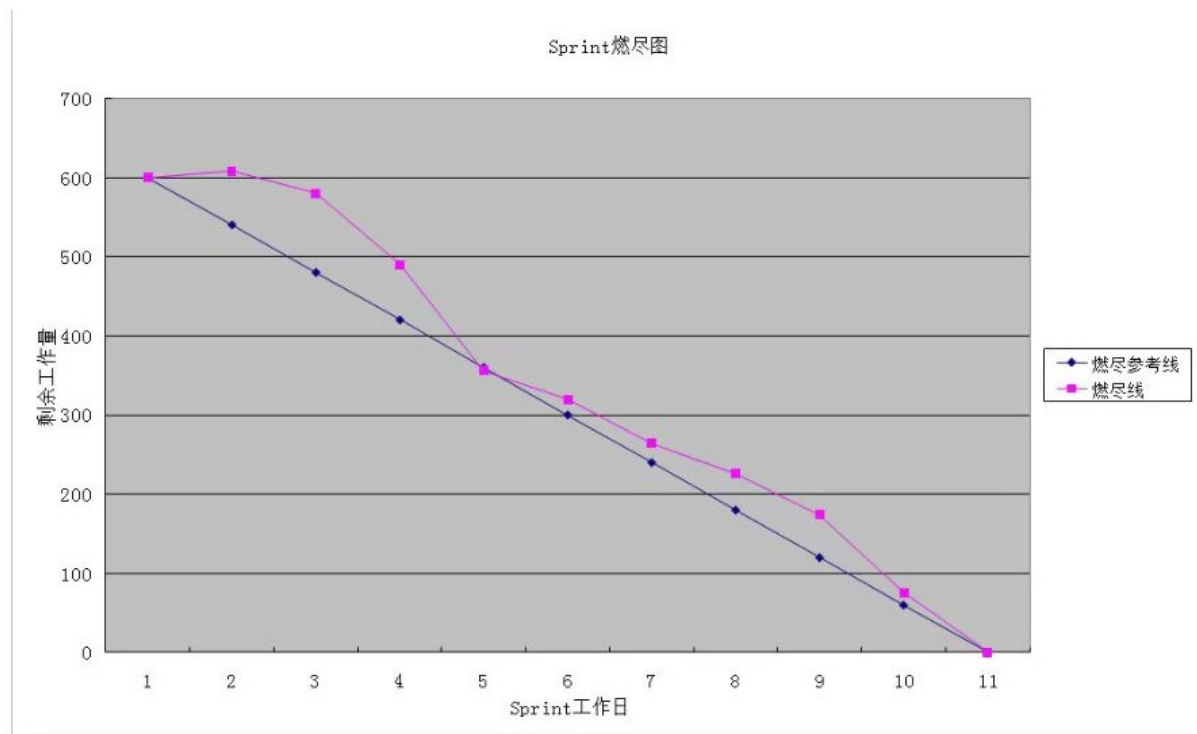
- A. Stage pattern;
- B. Task pattern;
- C. Phase pattern;
- D. Design pattern;

1.10 Low coupling manifests:

- A. design classes to collaborate with other classes
- B. collaboration should be kept to an acceptable minimum
- C. all design classes collaborate with all other design classes
- D. design classes should collaborate with their neighboring classes

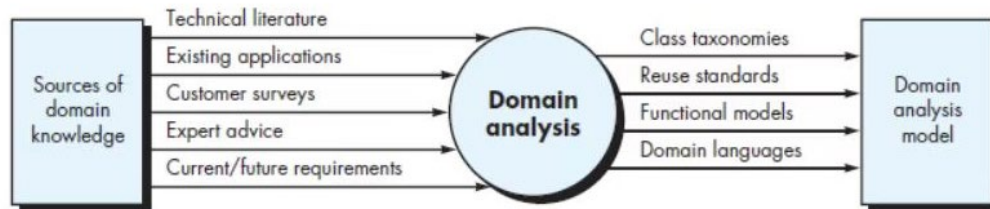
## 二、问答题

敏捷模型SCRUM的work product有backlog、sprint backlog和burn down chart（如下图），结合DevOps分析SCRUM模型（10分）



### 三、问答题

领域分析 (Domain Analysis) 的目的是什么? 举例并结合下图分析领域分析的过程 (10分)

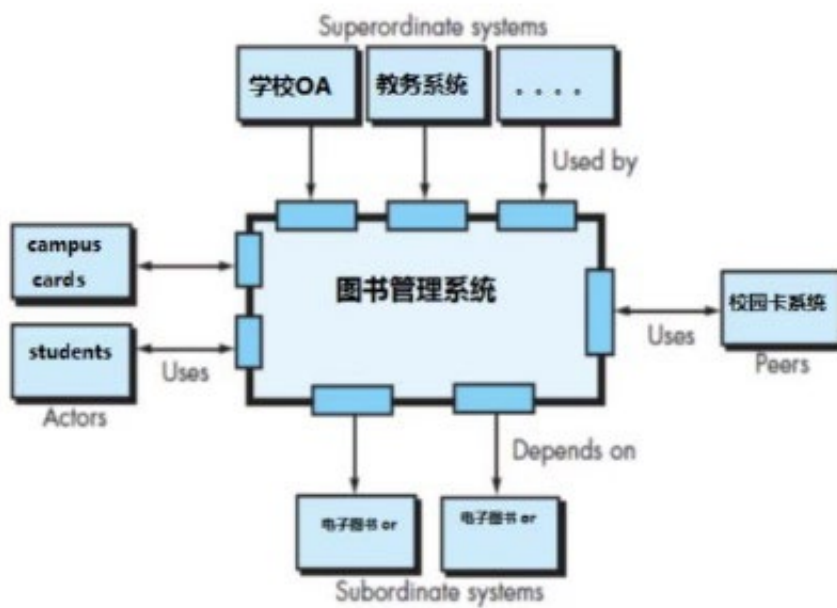


### 四、问答题

在分析类图或设计类图中的类之间有哪几种关系, 举例分析之 (10分)

### 五、问答题

从ARCHITECTURAL DESIGN设计的角度分析下图 (10分)





## 六、案例题

### 1. 需求范围描述：

一农产品生产商，以前自己生产并通过实体店来销售，往往销售慢、价格低且容易变质。日前，生产商准备委托软件企业开发一app来销售他的农产品，同时也可以起到在线的宣传作用。用户可以通过app浏览正在销售的农产品，注册成功后可以在线下单，注册时需要填写电话号码和身份证等信息，涉及用户私密信息系统将保密。用户选择需要的农产品加入购物车，之后进入数量和价格汇总、支付及运输流程。支付前，购物车的农产品可以删除、增加或修改，支付后但未发货前可以取消订单，因为农产品容易变质，一旦发货订单不能取消。每次购买超过200元农产品的订单享受9.5折、超过300元享受9折、超过500元享受最高8.8折的优惠。支付可采用在线信用卡、微信和支付宝，快递一律采用顺丰航空运输。订单有初始化新订单状态、往订单加物品状态、支付状态、运输状态、取消状态、收货状态、评价状态及订单结束状态。每天晚上12点开始系统需要做批处理，即对每天农产品的销售种类、数量和销售额进行统计；对每种农产品剩余数量进行动态跟踪，当每种农产品库存小于前两周的平均每天的销售额时，系统提示管理员及时补充库存或实时终止本农产品的销售。系统每周日、每月末和每年末要做统计报表。系统要能同时支撑5万人访问。

### 2. 请根据上述案例描述，完成以下分析和设计（命名必须规范）（30分）

#### 2.1 依据以上需求描述构建完整的use case diagram（6分）。

2.2 系统级别的状态图往往是系统程序架构设计的依据，类的状态图是类内方法定义的重要依据，构建订单的实体类（分析类）的状态图（4分）。

#### 2.3 构建本系统分析类图（analysis class diagram）（10分）。

2.4 从分析类图中选择两个典型分析类，完成其从分析类到设计类的细化（不涉及类中每个方法的实现逻辑）（8分）。

#### 2.5 本系统的非功能需求（features）有哪些（2分）？