Review Guideline

SOFTWARE ENGINEERING

1. About Examination

1）The scope of this examination is mainly covered by the text book

2）The examination will last 120 minutes and it is a closed-book exam.

3）Exam Types：

1．Multiple Choice（2 points * 5 =10）

2．Questions （9 points * 5=45, answer them briefly）

3．Analysis & Design（3 Exercises, you should draw some UML diagrams, write code or write use cases）

2. Main Contents

Object Oriented Software Engineering- Using UML, Patterns, and Java

1）The Basic Concepts of Object-Oriented Methodology (Chapter 2)

Class, abstract class, interface, inheritance, polymorphism, association, association class, super class, sub class

2）UML and UML Notations

Understanding what is the UML (Chapter 2)

Diagrams:

Interaction (sequence and collaboration) diagram (Chapter 2, Chapter 5)

Statechart diagram (Chapter2, Chapter 5)

Use case diagram (Chapter 2, 4)

Class diagram (Chapter 2)

Activity diagram (Chapter 2)

Component diagram (Chapter 5)

Deployment diagram (Chapter 7)

Package diagram (Chapter 2)

Relationships:

Association(aggregation, composition): Chapter 2, Chapter 5

Generalization: Chapter 5

Communication: Chapter 2

3）Patterns （Chapter 8, Apendix A)

Reuse by Inheritance and Delegation, Specification Inheritance and Implementation Inheritance,

The Basic Concept of Pattern

Bridge, Adapter, Façade, Proxy, Composite

Observer, Strategy, Command

Abstract Factory, Builder

Framework

4) Object-Oriented Analysis and Design
Concetps:
Object-oriented Analysis & Object-oriented Design (Chapter 2)
Application domain & Solution Domain (Chapter 2)

Requirements Elicitation (Chapter 4):
Requirements Elicitation Activities
Use Case Modeling (actor, use case, use case diagram, use case specification, relating use cases)
Identifying Initial Analysis Objects

Analysis (Chapter 5):
Analysis Model: Functional Model, Analysis Object Model, Dynamic Model
Entity, Boundary, and Control Objects
Identifications of Entity, Boundary, and Control Objects

System Design (Chapter 6, 7)
Services, Interfaces
Coupling and Cohesion
Layers and Partitions
Architectural Styles: Repository, Model/View/Controller, Client/Server, Peer-to-Peer, Three-tier, Four-tier, Pipe and Filter
Addressing Design Goals: Subsystems Mapping, Persistent Data, Access Control, Boundary Conditions

Object Design (Chapter 9)
Class Implementor, Class User, Class Extender
OCL

Mapping Models to Code (Chapter 10)
Forward Engineering, Reverse Engineering
Common Optimizations
Association Mapping

Testing (Chapter 11)
Faults, Erroneous States, and Failures
Test Cases,Test Stubs and Drivers
Testing Activities (Testing Strategis), Different Coverage (more whitebox testing strategies can be found from my PPT)