CIS 350 – Introduction to Software Engineering
Winter 2013, Study Guide for Midterm Exam

Software Life Cycle Models

1. List at least three problems with the waterfall model?
2. When would you use the waterfall life cycle model?
3. Name three different forms of a prototype.
4. Describe circumstances when it is appropriate to use rapid prototyping model.
5. List some key practices (at least five) of extreme programming.
6. Name the four phases of RUP.
7. List the main focus and major milestone of each phase in the RUP.
8. Types of maintenance – corrective, perfective, adaptive, and preventive

Software Requirements and Use Case Modeling

1. What are the subcomponents of the requirements development?
2. What are the subcomponents of the requirements management?
3. Name some requirements elicitation/gathering practices/strategies.
4. List some common risks/traps to avoid in requirements engineering.
5. What is a use case?
6. List at least four defining traits of an actor in use case modeling.
7. Distinguish between a use case and a use-case diagram.
8. List items included in a typical use case description (use case format).
9. Distinguish between a functional requirement and a non-functional requirement.
10. What techniques are used for validating requirements?

Software Project Planning and Tracking

1. What is a critical path and how do you identify the critical path in an activity network?
2. Name four budget/cost estimation techniques.
3. Name three measures for estimating software size
   (LOC, function points, and object/application points)
4. Name the main characteristic(s) that define the following project modes in COCOMO 81 – Organic, Semi-detached, and Embedded.
5. In plain English, describe how effort is calculated in each of following models of COCOMO 81 – Basic, Intermediate, and Advanced.
6. How many cost drivers are used in COCOMO 81?
7. Name the three models proposed in COCOMO II.
8. How many cost drivers are used in the early design model of COCOMO II?
9. How many cost drivers are used in the post-architecture model of COCOMO II?
10. What is the purpose of Earned Value Analysis (EVA) technique?
11. COCOMO 81 and COCOMO II models to estimate effort, development time, and team size.
12. Know how to apply EVA technique to compute project progress indicators – BAC, BCWS, BCWP, ACWP, SPI, SV, PSFC, PC, CPI, and CV

UML

1. What UML diagrams are used to model static/structural aspects of a software system?
2. What UML diagrams are used to model dynamic/behavioral aspects of a software system?
3. What is the difference between aggregation and composition?
4. How various relationships (dependency, generalization, association, aggregation, composition, and realization) are graphically rendered in UML?
5. What is the difference between a use case and a scenario?
6. Difference between sequence and collaboration diagrams?