CMPE-412 Software Engineering

Problem Session 22.05.2018

Ch 11 Configuration management (CM)

1. What about is software CM?
2. What are three main SE process categories of output?
3. What is software configuration?
4. What are 5 sources of configuration change?
5. What is software CM?
6. What shall be defined by CM standards?
7. What is a baseline? What are the 5 baseline types?
8. How milestones are related to baselines?
9. What is a software configuration item (SCI)?
10. What attributes has SCI?
11. What are 4 elements of SCM?
12. What are 5 SCM tasks?
13. What is a version, variant, release?

Ch. 10. Project Quality Management

1. What quality is?
2. What is quality planning? Quality assurance? Quality control?
3. What is Pareto analysis? 80-20 rule?
4. Consider Mini case (slides 11-13)
5. How sample size is defined (Slide 15)?
6. How the certainty factor is defined (Slide 15)? Use Standard Normal Table <https://www.mathsisfun.com/data/standard-normal-distribution-table.html>

For example, Certainty factor for certainty =95% (0.95) is found as follows. Let x=Certainty/2 (0.95/2=0.475). Find x value write out row mark + column mark (for 0.475 => 1.9 + 0.06 1.96)

1. What are the main 5 principles of Six Sigma approach?
2. What is the aim of Six Sigma approach?
3. What is quality control chart?
4. What is seven run rule?
5. What are the types of testing?
6. What 8 issues are in the scope of Quality Assurance?
7. What are the three elements of quality?
8. What are the two parts of the Cost of conformance (cost of control)?
9. What are the two parts of the Cost of failure of control (cost of non-conformance)?
10. What are the 7 activities of Software Quality Assurance?
11. What are the three tasks of Software review?
12. What are the 5 objectives of the Formal Technical Reviews (FTR)?
13. What the error is? Defect?
14. What the defect amplification model is?
15. What are the 4 criteria for FTR meetings?
16. What 4 roles an FTR meeting participants play?
17. What are 11 guidelines for FTR meetings arrangement?
18. What are the 4 principles of Statistical Quality Assurance?
19. What are the 5 document types to be considered in the SQA plan documentation section?
20. What are the 20 requirements of ISO-9001?

Ch. 9. Project Scheduling and Tracking

1. What is macroscopic project schedule?
2. How number of people and overall productivity are related? (slides 9-11)
3. How to find the number of people yielding maximal overall productivity?
4. What are the 5 Pressman’s project types? (slide 14)
5. How degree of rigor is calculated? (slides 15-25)
6. Activity network diagram: tasks, durations, paths, boundary times: ES, EF, LS, LF, path length, critical path, total float, slack, drag (slides 24-46, 49-74)
7. Reducing hierarchical tasks dependencies to leaf nodes dependencies (slides 47-48)
8. Optimistic, most likely, pessimistic, expected time estimates (slides 75-89)
9. Estimation of the probability of the completion date: duration variance, path variance, z-score, standard normal distribution table (slides 90-96)
10. Crashing technique: linear costs, minimal cost increase (slides 97-101)

Ch. 8. Software requirements modeling principles

1. What are the activities for Requirements development?
2. What are the activities for Requirements management
3. What are the 5 steps of Requirements specification?
4. What is defined at the Requirements Analysis and Specification stage?
5. What is the aim of inception? Elicitation? Elaboration? Negotiation? Specification?
6. What is a functional requirement? Non-functional requirement?
7. What a use-case is?
8. What is use case scenario? How is it defined? What is pre-condition? What is post-condition? What is normal events flow? What is alternative events flow? What is initiating actor? What is participating actor? Why the goal of the initiating actor is specified in the scenario?
9. What sequence diagram is? How is it constructed? How flow of events is reflected in a sequence diagram? What is the meaning of axes, rectangles, and arrows in the sequence diagrams?

Ch. 7. COCOMO

1. What is the meaning of COCOMO abbreviation?
2. What four approaches to the project cost estimation you know?
3. How cost depends on the project size? What project size metrics you know? How they can be converted to each other?
4. How estimation accuracy depends on the project stage? Why?
5. What three models original COCOMO model has? What quantities are output by the models? What are the inputs to them?
6. What three development modes are used in COCOMO?
7. How effort adjustment facto is defined in COCOMO intermediate model? How many cost drivers are used? What are the four categories used for the cost drivers? What are 6 possible qualitative values of the cost drivers? What is approximate numerical range of the cost drivers? What numerical value is related to the Nominal value?
8. What are the four phases used in COCOMO advanced model?
9. What are the four models of COCOMO 2?
10. What size metrics is used in COCOMO 2 Application composition model?
11. How application points are related to object points? What productivity depends on? How productivity depends on the developer’s experience and CASE maturity? What is the range for productivity? What is the unit of productivity measure?
12. How project complexity in object points depends on screens, reports, modules?
13. How object points can be converted to function points?
14. What formula is used for the effort estimate in COCOMO 2 Early design model?
15. How many cost drivers are used for effort adjustment factor in Early design model? Post-architecture model?
16. What two types of reuse model are used in COCOMO 2 Reuse model? What does it mean code adaptation and integration? Adaptation and adjustment?
17. What are the five scale factors in the Early design and Post architecture model?
18. How development time in COCOMO 2 depends on the effort? Does it depend on the staff number?