CMSE-201 problem session 13.04.2023

Ch 1. Introduction

1. What are the five indicators that a project goes wrong?
2. What is software?
3. What are the attributes of good software?
4. What is software engineering?
5. What are the five fundamental software engineering activities?
6. What is the difference between software engineering and computer science?
7. What is the difference between software engineering and system engineering
8. What are the three key challenges software engineering faces?
9. What are the three main contributors to the cost of software engineering?
10. What are the best software engineering techniques and methods?
11. What are challenges of web-oriented software engineering?
12. What is the difference between generic and custom software?
13. What software maintainability is?
14. What software dependability and security is?
15. What software efficiency is?
16. What software acceptability is?
17. What are the four reasons for software change?
18. What are the eight types of software systems?
19. What are the eight ACM/IEEE ethical principles?

Ch 2-A. SDLC models

1. What are the four general activities of a software process?
2. What are the ten detailed SDLC activities?
3. What waterfall model is? Its benefits? Deficiencies?
4. What incremental development model is? Its benefits? Deficiencies?
5. What integration and configuration model is? Its benefits? Deficiencies?
6. What are the three types of reusable software?
7. What V-shaped model is? Its benefits? Deficiencies?
8. What are the four phases of rapid application development (RAD) model? RAD benefits? Deficiencies?
9. What is spiral development model? Its benefits? Deficiencies?
10. What are the features of Agile development SCRUM model?

Ch 2-B SW development processes

1. What are the three activities of the requirements engineering?
2. What are the four design activities?
3. What is programming and debugging?
4. What is software verification? Validation?
5. What are the three test types?
6. What prototyping is? Its benefits? Deficiencies?
7. What process improvement is? What are its three activities?

Ch 3. Requirements engineering

1. What are functional, non-functional and domain requirements?
2. What are user and system requirements?
3. What is use-case diagram? What are its elements?
4. What are four types of system stakeholders?
5. What are the three types of non-functional requirements?
6. What is verifiable non-functional requirement?
7. What are the four phases of requirements elicitation and analysis process?
8. What are the five problems of requirements elicitation?
9. What are the two types of interview? Explain them
10. What are the five parts of a scenario description?
11. What are the five ways of writing requirements?
12. What are the problems with natural languages?
13. What a structured specification is?
14. What are the seven parts of a function description?
15. What a tabular specification is? Give an example
16. What a software requirement specification is?
17. What requirements validation is?
18. What five checks are to be used in requirements validation?
19. What is traceability of a requirement?
20. What are the four steps of requirements change?

Ch 4. Project management

1. What are the main three reasons for SW project management?
2. What are the four success criteria of the SW project management?
3. What are the three main difficulties of SW project management?
4. What are the six main factors influencing project management?
5. What are the five main activities of a SW project manager?
6. What are the three classes of risks for SW project management by impact?
7. Give at least one example of product, product, and business risks
8. What are the four risk management processes? What are the outcomes of each such a process?
9. What are the five types of risks?
10. What scales are used to measure risk probability and consequences?
11. What are the main three strategies in risk management?
12. What is the method of risk definition?
13. What are the indicators for estimation risks?
14. What are the indicators for organizations risks?
15. What are the indicators for people risks?
16. What are the indicators for requirements risks?
17. What are the indicators for technology risks?
18. What are the four main people management factors ?
19. What are the three types of people motivation?
20. What are the three personality types?
21. Explain the meaning of the statement: “A good group is consistent and has a team spirit”. What is group consistency? Team spirit?
22. What does it mean: “an effective group should have a balance of all types”? How do you understand it?
23. What are the four factors affecting group communication?

Ch 5. Project planning and scheduling

1. What are the main four activities of planning?
2. What are the three stages of planning?
3. How price and cost (expenditures) are related?
4. What three kinds of data are presented by the main plan?
5. What are the five supplemental plans?
6. What are the main two reasons for a plan changing?
7. What are the four properties of an activity?
8. What is the difference between the milestone and deliverable?
9. Given a set of inter-related activities, build an activity network diagram with milestones
10. Given an activity network diagram, start date, and calendar, calculate earliest finish date, possible paths, their lengths, critical path, and critical tasks (slide 28)
11. Given an activity network diagram, start data, and calendar, draw an activity bar chart (slide 30)
12. Given an activity network diagram, start data, calendar, and human resources available, build a schedule (Gantt chart, staff allocation chart, slide 31)
13. Given a staff allocation chart, draw a human resources histogram (slide 34)
14. Given activity network diagram, start date, and calendar, define, Early start, Early finish, Late start, Late finish, and slack of each activity (slides 37-42)

Ch 6 COCOMO

1. What are the three modes of the Basic COCOMO model? What is used as an input to the model? What are its outputs?
2. What is the difference between Basic and Intermediate COCOMO models?
3. How many cost drivers are used in Intermediate COCOMO model? What for they are used? What four groups comprise the drivers?
4. Can COCOMO model be used even if size in KLOC is not available at beginning of the project development?
5. What function point (FP) count is? What are the five inputs for FP calculation? How it can be adjusted?
6. How many technical complexity factors are used for FP adjusting? What scale is used for them?
7. How FP can be converted to KLOC?
8. What are the five factors affecting software productivity?

Ch 7 Architectural design

1. What architecture is?
2. What is the box and line diagram?
3. What are the two ways of using architectural models?
4. What three types of decision shall be made in architectural design?
5. What are the four maın constraınt to be taken ınto account when developıng the system archıtecture
6. What are the three most ımportant goals of the archıtecture development