CMSE-201 problem session 05.06.2023

Ch 7 Architectural design

1. Why reuse of archıtecture ıs possıble?
2. Give an example of a relation between architecture and system characteristics
3. What are the five constituents of the 4+1 view architecture model?
4. What is characteristic for layered architecture pattern? What are its benefits? Disadvantages?
5. What is client-server architecture pattern? How one server can serve many clients concurrently? What are its benefits? Deficiencies?
6. What is Model-View-Controller architecture pattern? What are its advantages? Deficiencies?
7. What is pipe-and-filter architecture pattern? What are its advantages? Deficiencies?
8. What is repository architecture pattern? What are its advantages? Deficiencies?
9. What are the four types of application architectures?

Ch. 8 System modeling

1. What are the two reasons to use of graphical system models ?
2. What the context model aim is?
3. What is the difference between the context models and use-case diagram?
4. What is the aim of the process model? What are its elements? How synchronization is specified? How decisions are specified?
5. What is the aim of the sequence diagram? What are its elements? What is the message? How the message is denoted? What are the message parameters? How the message parameters are specified? How the activity period of an actor is specified? How the time-line of an actor is specified? How ALT and LOOP elements are specified?
6. What is the communication diagram? What is the difference between the communication and sequence diagrams?
7. What the class diagram is? What the class is? What is the relation between a class and an object? What is the state variable? What is the method? What is the interface of the method? What is the formal parameter? What is the actual parameter? What is the relation between the forma and actual parameters? What is the association diagram? Inheritance diagram? Composition diagram? Aggregation diagram? Dependency diagram? Navigate diagram? How constraints on the associations are specified? What is the meaning of 1..\*, 1, 0..1?
8. What four metrics can be derived from an association diagram?
9. What is the package diagram? How the package and association diagrams are related?
10. What is the data-flow diagram? What are its elements? How hierarchical data-flow diagrams can be constructed?
11. What is the state-machine diagram? What are its elements? How hierarchical state-machine diagrams can be constructed? What actions can be associated with a state? When the transition happens?
12. What is the model-driven approach? What are the computation independent, platform independent, and platform specific models?

Ch. 9 Testing

1. Validation and defect testing
2. Verification and validation
3. Software inspection and testing
4. Guideline-based testing
5. Equivalence partitioning
6. Stubs and drivers, their use in the bottom-top and top-bottom development
7. Interface testing
8. Breadth-first and bottom-first strategies in testing
9. Use-case testing using sequence diagrams
10. Test-driven development
11. Regression testing
12. Release testing
13. Performance testing, stress testing
14. Acceptance testing

Ch. 10 Quality management

1. What are the aims of quality management on an organization level? Project level?
2. What is the aim of the quality management process?
3. How shall be composed quality team?
4. What a quality plan is? What is its structure?
5. What is “software fitness for purpose”?
6. How to resolve quality conflicts?
7. How product and process quality are related?
8. What is process-based quality?
9. Why standards are important? What are the five types of standards?

Ch. 11 Configuration management

1. What the configuration is? What is configuration item? What is check-in and check-out?
2. What are the four configuration management activities?
3. What is the version? What is the baseline? What is the codeline? What is the mainline?
4. What is branching and merging? How versions are identified?