

**Mid-Semester Examination, Autumn-2021**  
**Department of CSE**

Date: 21.10.2021

Subject: **Software Architecture**

Total **100** marks

Subject code: **CS6403**

A. Answer all questions. (Each question carries '4' marks). Please be **precise**.

1. If you intend to join a software development company and it wants you to build an online job portal (services-application) that informs the subscribed users, whenever a new job matches to his/her profile. Suggest and explain the appropriate architecture style for the application.
2. What do you understand by faithful implementation and unfaithful implementation of architecture? Explain all issues associated with architecture-centric design.
3. Explain turbine model as a visualization model. Discuss all the components of cross-section views of turbine model.
4. How descriptive architecture is different from the prescriptive architecture. Explain with a neat diagram.
5. Define the architectural pattern? Explain three-tier architecture pattern with diagram.
6. Explain patterns, styles and DSSA with a graphical representation.
7. What do you understand by object-oriented styles? Explain its UML class diagram with respect to Lunar Lander.
8. Explain two architectural styles under dataflow category.
9. Explain peer-to-peer style with a suitable example.
10. Explain CORBA with respect to client and server process.
11. What are the various types of connectors? Explain the role of a connector as converter.
12. Explain Wright ADL with an example. Write all of its evaluation parameters.
13. What are the types of visualization? Explain the hybrid visualization with various evaluation parameters.
14. Explain blackboard architecture style with an example.
15. Explain xADL visualization with various evaluation parameters.
16. What is architectural analysis? Discuss the formal and informal architectural analysis.
17. Write all the concerns relevant to architectural analysis. What are the four 'C's associated with architectural analysis goals.
18. Write the scope of architectural analysis. Explain the data exchange in a system or subsystem with neat diagram.

**B. MCQs:** Answer all questions. (Each correct answer carries '1' mark and -1/3 mark for the wrong answers).

1. Which is not an important characteristic of a model?

- A. Ambiguity
- B. Accuracy
- C. Precision
- D. Cohesion

2. Which is a commonly used viewpoint?

- A. Logical viewpoint
- B. Static viewpoint
- C. Dynamic viewpoint
- D. Development viewpoint

3. Which is not a early architecture description language?

- A. Darwin
- B. Rapide
- C. Wright
- D. xADL

4. Acme is part of which one of following?

- A. Early architecture description languages
- B. Domain- and style-specific languages
- C. Extensible architecture description languages
- D. None

5. Which is not a kind of visualization?

- A. Effect visualization
- B. Evaluating visualizations
- C. Textual visualization
- D. Behavioral visualization

6. Which is not a mechanism for text visualization?

- A. Syntax highlighting
- B. Autocomplete
- C. Structural folding
- D. Typecasting

7. Which is a tool for analyzing and simultaneously visualizing concurrent systems' behavior using a modeling language called FSP?

- A. ACME
- B. Arch studio
- C. UML
- D. LTSA

8. Which is not a dimension of architectural consistency?

- A. Refinement Consistency
- B. Interaction Consistency
- C. Interchange Consistency
- D. Interface consistency

9. Which statement is not true?

- A. Names and interfaces of interacting components may match, but behaviors need not
- B. Consistency is an internal property of an architectural model
- C. Completeness is an external goal
- D. Architectural models are refined during the design process

10. Which of the following is not an advantage of Pipe and Filter style?

- A. It is simple; no complex component interactions
- B. High maintainability and reusability of individual components
- C. concurrent execution is possible
- D. Batch organization of processing

11. Which style has Hierarchical system organization?

- A. Event based
- B. Peer to Peer
- C. Layered
- D. Rule based

12. Which of the following is false about the C2 style?

- A. It is a heterogeneous architectural style
- B. It is a direct invocation style in which independent components communicate exclusively through message routing.
- C. Data Elements: Messages – data sent as first-class entities over the connectors. Notification messages announce changes of state. Request messages request performance of an action.
- D. Topology: Layers of components and connectors, with a defined “top” and “bottom”, wherein notifications flow downwards and requests upwards.

13. Which of the following is not a type of connector?

- A. Data access
- B. Linkage
- C. Distributor
- D. Communicator

14. Which of these values is not valid for dimensions of stream connectors?

- A. synchronous
- B. asynchronous
- C. time out synchronous
- D. time out asynchronous

15. Which of the following is not a dimension of Adapters?

- A. presentation conversion
- B. protocol conversion
- C. packaging conversion
- D. priority conversion

16. Which is not true about benefits of First-Class Connectors?

- A. Separates computation from interaction
- B. Minimizes component interdependencies
- C. Potential for supporting dynamism
- D. does not Facilitate heterogeneity

17. Which of the following is false about Connector Dimension Inter-Relationships?

- A. Requires means Choice of one dimension mandates the choice of another and Prohibits means Two dimensions can never be composed into a single connector
- B. Requires means Choice of one dimension mandates the choice of another and Restricts means Dimensions are not always required to be used together
- C. Requires means Choice of one dimension mandates the choice of another and Cautions means Combinations always results in unstable or unreliable connectors
- D. Prohibits means Two dimensions can never be composed into a single connector and Restricts means Dimensions are not always required to be used together

18. HTTP/REST is example of which type of connectors?

- A. Distributor
- B. data access
- C. stream
- D. arbitrator

19. Which unique set of problems in software engineering have partial solution?

- A. Essential difficulties
- B. Accidental difficulties
- C. Commercial difficulties
- D. Implementation difficulties

20. Which is not a part of essential difficulties?

- A. Intangibility
- B. Changeability
- C. Conformity
- D. Simplicity

21. Which among the following is not a result of extension of Moore's law?

- A. Computing power becomes smaller
- B. Machines become faster
- C. Transistors becomes non efficient
- D. Machines becomes efficient

22. What does "Principal" implies in design decision?

- A. All design decisions are architectural
- B. Some design decisions are not architectural
- C. It necessarily impacts a system's architecture
- D. It do not necessarily impact a system's architecture

23. Prescriptive architecture is also considered as?

- A. As realized architecture
- B. As implemented architecture
- C. As conceived architecture
- D. As deceived architecture

24. Architectural drift is a concept of?

- A. Architectural Degradation
- B. Architectural Recovery
- C. Architectural Evolution
- D. Architectural Erosion

25. Choose the option which has the correct set of architectural elements

a. Data, b. Processing, c. Interaction, d. Definition

- A. a, b
- B. b, c, a
- C. a, d
- D. c, b, d

26. What is a common approach to architectural recovery?

a. Syntactic clustering b. Semantic clustering

- A. a, b
- B. Only b
- C. Only a
- D. None of the above

27. Which of the following is not an Alternate Design Strategy?

- A. Standard
- B. Parallel
- C. Adaptive
- D. None of the above

28. Which tier in "State-Logic-Display" returns values for display?

- A. Display
- B. Business Logic
- C. Both Display and Business Logic
- D. None of the above

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