

Dept. of CSE, M. Tech. CS3, End Semester Examination

Question paper on Software Architecture (CS652)

Time: 2 Hours, Full marks: 100

Part A: Long Questions

[18 x 4 = 72 marks]

- 1] You may assume that you are hired by a software development company and it wants you to build an online job posting 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] Explain the working principle of LTSA for visualization of software architecture
- 3] What are the different constraints of REST protocol?
- 4] What is software mobility? Explain its various paradigms
- 5] Explain four layers of PACE architecture with appropriate diagram.
- 6] What are the major functionalities associated with TOGAF?
- 7] What are the desired skill set of an architect?
- 8] Compare the layered architectural style with shared architectural style
- 9] What are the elements of domain model? Explain each element in short.
- 10] What are the steps during deployment of architecture?
- 11] Explain the Koala ADL with its various evaluation parameters.
- 12] Differentiate between architecture design, pattern and style.
- 13] Write short note on the Twin peak Model.
- 14] Explain Darwin ADLs by considering its various evaluation parameters.
- 15] Why is software architecture important; justify with turbine model?
- 16] Explain blackboard architecture with an example
- 17] What are the benefits of layered architecture?
- 18] a. Explain in short Herzberg's two factor theory.
b. Explain Need Theory.

Part B: MCQ Question

[28 marks]

Each wrong answer carries minus 1/3 marks.

Software Architecture End Semester Examination (M. Tech 1st SEM)

Negative Marking ; 0.33%

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1. An architectural style is a named collection of architectural design decisions
(1 Point)

- ☐ that are applicable in a given development context
- ☐ that are applicable to a recurring design problem
- ☐ Both A and B

2. A _____ is a picture or visual representation of architectural design decisions in a particular format
(1 Point)

- ☐ depiction
- ☐ interaction
- ☐ style
- ☐ None of the above

3. _____ is a piece of software that acts as a bridge between a particular architectural style and a set of implementation technologies.
(1 Point)

- ☐ middleware
- ☐ Component model
- ☐ Architecture implementation framework
- ☐ All of the above

4. Which model in the domain model describes the entities and data in the domain
(1 Point)

- ☐ Information Model
- ☐ Feature Model
- ☐ Operational Model
- ☐ Entity Model

5. Which of the following is true regarding generative technologies:

- A)The implementation is generated automatically and is of very high quality
- B)The approach is only applicable in those limited situations where the domain is so thoroughly understood.
- C)parser generator is an example of generative technology.

(1 Point)

- ☐ Only A
- ☐ Both A and B
- ☐ Both A and C
- ☐ Both A, B and C

6. Which model in the domain model defines how data and control flow through entities

(1 Point)

- ☐ Information Model
- ☐ Data Model
- ☐ Operational Model
- ☐ Feature Model

7. In coordinating multiple visualization, which visualization strategy repeatedly poll a model repository for changes

(1 Point)

- ☐ Peer-to-peer
- ☐ Master-Slave
- ☐ Pull-based
- ☐ Push-based

8. _____ is a quality that reflects a software system's ability to meet its performance requirements while minimizing its usage of the resources in its computing environment

(1 Point)

- ☐ Compatibility
- ☐ Efficiency
- ☐ Scalability
- ☐ Adaptability

9. A _____ is a program that takes a stream of text characters as its input and produces a stream of characters as its output.

(1 Point)

- ☐ pipe
- ☐ filter
- ☐ server
- ☐ connector

10. Predecessors, that is, existing architectures, provide the surest base for the vast majority of new developments. _____ development is the one for which there is no immediate architectural predecessor.

(1 Point)

- ☐ Greenfield Development
- ☐ DSSA approach
- ☐ Object Oriented Development
- ☐ Agile Development

11. A software system's _____ is a constraint on the manner in which the system implements and delivers its functionality.

(1 Point)

- ☐ Functional property
- ☐ Architecture
- ☐ Complexity
- ☐ Non-functional property

12. Which are the four C's of architectural analysis goal
(1 Point)

- ☐ Completeness, Co-ordination, Compatibility, Correctness
- ☐ Co-operation, Co-ordination, Compatibility, Correctness
- ☐ Co-operation, Consistency, Compatibility, Correctness
- ☐ Completeness, Consistency, Compatibility, Correctness

13. Which of the following is false regarding Object-Oriented Design
(1 Point)

- ☐ The essence of OOD is the identification of so called objects, which are encapsulations of state with functions for accessing and manipulating that state
- ☐ OOD says nothing about deployment issues, security and trust or use of commercial components
- ☐ OOD is complete approach and effective in all situations

14. A model is _____ if it is correct, conforms to fact, or deviates from correctness within acceptable limits.
(1 Point)

- ☐ Accurate
- ☐ Precise
- ☐ Distinct
- ☐ All of the above

15. Changing the deployment of a component during runtime is called polymorphic deployment
(1 Point)

- ☐ True
- ☐ False

16. _____ is a process for identifying risks in a software design early in the development life cycle
(1 Point)

- ☐ ATAM
- ☐ MTAT
- ☐ XTEAM
- ☐ All of the above

17. The result of a _____ simulation is a directed graph of nodes, with each node representing an event and each edge representing a casual relationship between events.
(1 Point)

- ☐ Rapide
- ☐ LTSA
- ☐ MTAT
- ☐ xADLite

18. Reference architectures are not considered as architecture because of presence of explicit point of variation
(1 Point)

- ☐ True
- ☐ False

19. In which of the following order time require to make changes to the system keeps on increasing
(1 Point)

- ☐ Deployed, Implementation, Architecture, Requirement
- ☐ Requirement, Architecture, Implementation, Deployed
- ☐ Requirement, Implementation, Deployed, Architecture
- ☐ Architecture, Implementation, Design, Deployed

20. A _____ is the set of principal design decisions made about the system
(1 Point)

- ☐ Software system's architecture
- ☐ Configuration
- ☐ Architectural pattern
- ☐ Architectural sytle

21. Which is true regarding distributed system
(1 Point)

- ☐ Latency is zero
- ☐ The network is secure
- ☐ Bandwidth is finite
- ☐ The network is reliable

22. Which of the following is not a layer of the Three-Layer (3L) architecture.
(1 Point)

- ☐ Planning Layer
- ☐ Sequencing Layer
- ☐ Reactive Layer
- ☐ None of the above

23. A domain-specific software architecture (DSSA) comprises
(1 Point)

- ☐ A reference architecture
- ☐ A component library
- ☐ An application configuration method
- ☐ All of the above

24. Movement of software across hardware hosts during the system's execution, that action is referred to as
(1 Point)

- ☐ stateful mobility
- ☐ stateless mobility
- ☐ physical mobility
- ☐ code mobility

25. Adaptation management and evolution management can be separated into three types of activities

(1 Point)

- ☐ Analysis, Improvised, Operations
- ☐ Design, Deploy, Maintain
- ☐ Model, Design, Deploy
- ☐ Strategic, Tactical, Operations

26. In turbine model, the volume of the rings (thickness multiplied by area) represents

(1 Point)

- ☐ Time
- ☐ Product State
- ☐ Investment made
- ☐ Efforts made

27. _____ is the activity of discovering important system properties using the system's architectural models.

(1 Point)

- ☐ Architectural Analysis
- ☐ Requirement gathering
- ☐ Modeling
- ☐ Visualizing

28. The Key notion of _____ is that if a developer or company has worked within a particular application domain for many years, it is likely that a best approach or best general solution for applications within that domain will have been identified.
(1 Point)

- ☐ OOPs
- ☐ DSSAs
- ☐ TOGAF
- ☐ DODAF

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