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PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING

TEST - 1

Even Semester: 2018-19 | **Date**: 06 March 2019

Course Code: CSE 314 | **Time**: 1 Hour

Course Name: Software Architecture | **Max Marks**: 40

Programme & Sem: B.Tech (DE) & VIII Sem (Group-I) | **Weightage**: 20%

Instructions:

(i) ***Read the question properly and answer accordingly.***

(ii) ***Question paper consists of three parts.***

Part A

Answer **any four** Questions. **Each** question carries **four** marks. (4Qx4M=16)

1. Define the term "Software Architecture". Explain any two process recommendations that make a good architecture.
2. Explain the pipes and filters architectural style with suitable example.
3. Differentiate between open-loop control system and feedback control system.
4. Enlist the components and connectors for client-server architectural style, through an example.
5. Enumerate the advantages and disadvantages of Hypertext architectural style, by considering Wikipedia as an example.

Part B

Answer **both** the Questions. **Each** question carries **seven** marks. (2Qx7M=14)

6. With a neat diagram, explain the Architecture Business Cycle.
7. Explain the shared data solution for KWIC (Keyword in Context) problem, with a diagram.

Part C

Answer the Question. Question carries **ten** marks. (1Qx10M=10)

8. Which architectural style would you adopt for "Whatsapp" group-messaging? Provide the rationale for your decision. Discuss the components, connectors, advantages and invariants of your chosen approach.

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TEST - 2

Even Semester: 2018-19
Course Code: CSE 314
Course Name: Software Architecture
Program & Sem: B.Tech & VIII Sem (DE) Group-I

Date: 16 April 2019
Time: 1 Hour
Max Marks: 40
Weightage: 20%

Instructions:

(i) ***Read the question properly and answer accordingly.***
(ii) ***Question paper consists of three parts.***

Part A

Answer **all** the Questions. **Each** question carries **four** marks. (4Qx4M=16)

1. Define the term 'Architectural Pattern'. Briefly explain the context and problems in MVC architectural pattern.
2. Depict the general quality attribute scenario with a diagram.
3. Mention any four categories of architectural patterns.
4. Draw the CRC card for Layered architectural pattern and explain briefly.

Part B

Answer **both** the Questions. **Each** question carries **seven** marks. (2Qx7M=14)

5. Explain the Fault detection and recovery tactics.
6. Explain the Performance tactics with a diagram.

Part C

Answer the Question. The question carries **ten** marks. (1Qx10M=10)

7. Explain the Object-oriented implementation of Broker architectural pattern. Differentiate between the roles of client-side and server-side proxy objects.

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END TERM FINAL EXAMINATION

Even Semester: 2018-19 | **Date**: 23 May 2019

Course Code: CSE 314 | **Time**: 3 Hours

Course Name: Software Architecture | **Max Marks**: 80

Program & Sem: B.Tech / 8 | **Weightage**: 40%

Instructions:

(i) ***Make suitable assumptions, where applicable.***

Part A

Answer **all** the Questions. **Each** question carries **1** mark. (20Qx1M=20M)

1.1 What is the Architecture of a software based on?
- a) Design
- b) Requirements
- c) All of the mentioned
- d) None of the mentioned

1.2 Why is Software architecture so important?
- a) Communication among stakeholders
- b) Early Design decisions
- c) Transferable abstraction of a system
- d) All of the mentioned

1.3 What factors affect the software architecture of a system?
- a) Technical
- b) Business
- c) Social
- d) All of the above mentioned

1.4 Which of the following are correct statements?
- a) An architecture may or may not defines components
- b) An architecture is not dependable on requirements
- c) An architecture is foremost an abstraction of a system that suppresses details of the components that do not affect how they are used
- d) All of the above mentioned

1.5 Data Centered architecture is subdivided into which of the following subtypes?
- a) Repository and Blackboard
- b) Batch Sequential, Pipes and Filters
- c) Client and Server Architectures
- d) None of the above

1.6 In which of the following style new clients can be added easily?
a) Data Flow Architecture
b) Call and Return Architecture
c) Data Centered Architectures
d) None of the mentioned

1.7 What is the architectural style followed by the World Wide Web?
a) Call and Return style
b) Hypertext style
c) Blackboard style
d) Microservices

1.8 A Compiler uses which architectural style?
a) Blackboard style
b) Event driven style
c) Pipes and Filters style
d) None of the above

1.9 Functional Decomposition style is an example of:
a) Event driven design
b) Master Slave design
c) Data Flow design
d) All of the above

1.10 The request-response transactions in a Web Server is fundamentally:
a) Stateless
b) Stateful
c) Both a and b
d) None of the above

1.11 Which among these does not influence the architecture of the system:
a) Stakeholders
b) Technical Environment
c) Developing Organization
d) Test cases

1.12 Which among the following is NOT a quality attribute:
a) Availability
b) Transferability
c) Modifiability
d) Testability

1.13 UNIX Shell programming is an example of which of the following architectural styles?
a) Pipe and Filter
b) Blackboard
c) Broker

1.14 A layered system is organized:
a) Horizontally
b) Vertically
c) Hierarchically
d) None of the above

1.15 Which of the following is NOT a Cloud Service.
a) Platform as a Service
b) Layer as a Service
c) Infrastructure as a Service
d) Platform as a Service

1.16 OSI Network Model represents _____ architectural style

1.17 Swiggy Food Application is a type of _____ architectural pattern

1.18 A model where the services are offered to a single organization is called _____ Cloud

1.19 _____ is the security property that data or services are being delivered as intended.

1.20 Full form of REST is _____

Part B

Answer **all** the Questions. **Each** question carries **8** marks. (5Qx8M=40M)

2. Explain the Blackboard architectural pattern with a class diagram.

3. Draw the object oriented model for Microkernel System and explain.

4. Differentiate between the terms: Service, IaaS, PaaS and SaaS in Cloud Computing.

5. How is "location transparency" and "platform transparency" achieved in client-server computing? Differentiate between stateful and stateless sessions in client-server pattern.

6. Explain the Cloud Computing Architecture, by providing a graphical view.

Part C

Answer **all** the Questions. **Each** question carries **10** marks. (2Qx10M=20M)

7. Imagine that you have to architect a mobile application where you need to send the latest cricket score and news to subscribers of your application. Which architectural pattern would you choose? Justify your pattern choice and explain the pattern in detail.

8. Explain the sequence diagram for master-slave architectural pattern. Give two practical applications where master-slave pattern is useful and justify the answer.

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SCHOOL OF ENGINEERING

SUMMER TERM / MAKE UP END TERM EXAMINATION

Semester: Summer Term 2019 | **Date**: 24 July 2019

Course Code: CSE 314 | **Time**: 2 Hours

Course Name: Software Architecture | **Max Marks**: 80

Program & Sem: B.Tech & VIISem (2015 Batch) | **Weightage**: 40%

Instructions:

(i) ***Make suitable assumptions, where applicable.***

Part A

Answer **all** the Questions. **Each** question carries **five** marks. (4Qx5M=20M)

1. Define the term "Software Architecture". Explain any two process recommendations that make a good architecture.
2. With a neat diagram, explain the Architecture Business Cycle.
3. Differentiate between process and product recommendations for software architecture.
4. Provide a real world example for Broker architectural pattern.

Part B

Answer **all** the Questions. **Each** question carries **eight** marks. (5Qx8M=40M)

5. With a neat diagram, explain the relationship between the terms: reference model, architectural pattern, reference architecture and software architecture.
6. Explain the peer-to-peer pattern with an example. Discuss the key issues in the pattern.
7. Explain the Cloud Computing Architecture, with a graphical view.
8. Describe the dynamic behavior of microkernel pattern with a sequence diagram.
9. Differentiate between the terms: Service, IaaS, PaaS and SaaS in Cloud Computing.

Part C

Answer **both** the Questions. **Each** question carries **ten** marks. (2Qx10M=20M)

10. Imaging that you are a software architect in a firm. You are tasked with the responsibility of searching and sorting of big data (in the order of TBs). Which architectural pattern would you employ? Justify your answer. Explain the dynamic behavior of the pattern via sequence diagram.

11. Explain the event bus pattern with a diagram. Also provide an example of how the pattern can be used in software development environment.