

Code No:R1641052

# R16

Set No. 1

IV B.Tech I Semester Regular/Supplementary Examinations, March - 2021

## SOFTWARE ARCHITECTURE AND DESIGN PATTERNS

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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### PART-A(14 Marks)

1. a) Write short notes on Architecture Activities. [3]
- b) What is software product line? [2]
- c) Explain How to Use a Design Pattern. [3]
- d) What are creational patterns? Write intents of creational patterns. [2]
- e) Describe Structures of Factory Method and Builder Patterns. [2]
- f) Identify and explain Design Problems of document editor. [2]

### PART-B(4x14 = 56 Marks)

2. a) Explain architecture as a transferable, re-usable model with an example. [7]
- b) What are the architectural styles? List it's patterns. [7]
3. a) Discuss in detail implementation of CBAM. [7]
- b) What are the Techniques for repairing interface mismatch and avoiding interface mismatch? [7]
4. a) Discuss in detail Catalog of Design Pattern. [7]
- b) Explain Factory method with an example. [7]
5. a) Explain the structure of decorator pattern with suitable example. [7]
- b) Explain the structure of Bridge pattern with example. [7]
6. a) Explain Intent, Applicability and structure of Behavioral patterns. [7]
- b) Explain the observer design pattern and discuss the consequences and implementation issues. [7]
7. a) Explain Document Structure and User Operations of Designing a Document Editor. [7]
- b) Discuss about the supporting multiple window systems design problem. [7]

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**Set No. 2**

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**(Computer Science and Engineering)**

**Time: 3 hours**

**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A(14 Marks)**

1. a) What are the Quality Attributes? [2]
- b) Explain Participants in the ATAM. [3]
- c) Explain how to Select a Design Pattern. [2]
- d) Explain about Façade of structural pattern. [2]
- e) Write a short note on chain of responsibility. [2]
- f) Explain about document structure. [3]

**PART-B(4x14 = 56 Marks)**

2. a) Why Software Architecture is Important? Explain The Architecture that Enables a System's Quality Attributes. [7]
- b) Explain in detail about reconstructing software architecture. [7]
3. a) What are the steps that can be specified in component based design as Search. [7]
- b) Explain the phases of ATAM. [7]
4. a) Explain the builder pattern with example. [7]
- b) Discuss in detail MVC architecture in small talk. [7]
5. a) Explain Composite, Decorator of structural Patterns. [7]
- b) Explain collaborations of Flyweight. [7]
6. a) Explain Participants, Collaborations and Consequences of strategy pattern. [7]
- b) Explain the participants, collaborations, implementation and Sample code of the mediator pattern. [7]
7. a) Discuss in detail Celsius Tech product line development with concepts of design patterns. [7]
- b) Explain the Spelling Checking and Hyphenation design problem in detail. [7]

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**Set No. 3**

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**SOFTWARE ARCHITECTURE AND DESIGN PATTERNS**  
**(Computer Science and Engineering)**

**Time: 3 hours**

**Max. Marks: 70**

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A(14 Marks)**

1. a) Why is Software Architecture Important? [2]
- b) List different Outputs of the ATAM. [2]
- c) Differentiate between Structural and Creational Patterns. [2]
- d) How design patterns solve design problems. [2]
- e) What are consequences of Bridge Pattern? Explain its Known uses. [3]
- f) Explain Document Structure of Document Editor [3]

**PART-B(4x14 = 56 Marks)**

2. a) Differentiate between System Architecture versus Software Architecture. [7]
- b) Discuss in detail Architectural Structures and Views. [7]
3. a) Explain the Quantitative approach of Architecture design decision making for CBAM. [7]
- b) Explain the impact of software architecture in future use. [7]
4. a) State and explain the classification of design patterns. [7]
- b) Explain the singleton pattern with an example? [7]
5. a) Explain in detail Adapter, Proxy of Structural Patterns. [7]
- b) Explain consequences of façade and flyweight. [7]
6. a) Explain Participants, Collaborations and Consequences of template method. [7]
- b) Discuss the implementation issues of Iterator. [7]
7. a) Discuss in detail inter operability of World Wide Web in design pattern. [7]
- b) Explain supporting multiple look and feel standards and user operations. [7]

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Set No. 4

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**SOFTWARE ARCHITECTURE AND DESIGN PATTERNS**  
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A**(14 Marks)

1. a) Explain reasons for software architectures importance. [2]
- b) Explain Participants in the CBAM. [2]
- c) Explain Describing Design Patterns. [2]
- d) Write sample code for singleton pattern. [2]
- e) Describe the Structure and participants of Observer Pattern. [3]
- f) What are seven problems of Lexi's Design? Explain. [3]

**PART-B**(4x14 = 56 Marks)

2. a) List and Explain quality attributes for system and software? [7]
- b) Describe reference models and reference architectures. [7]
3. a) Explain Utility and Utility-Response Curves of CBAM. [7]
- b) Explain about software product lines. [7]
4. a) List and explain various ways of organizing the design patterns. [7]
- b) Explain Builder pattern with an example. [7]
5. a) Discuss in detail about any two Structural Patterns [7]
- b) Explain collaborations and consequences of Flyweight and Proxy. [7]
6. a) Explain Participants, Collaborations and Consequences of iterator pattern. [7]
- b) Discuss the consequences and implementation issues of memento. [7]
7. a) Discuss in detail Air Traffic Control designing for high availability [7]
- b) Which pattern can be used to achieve multiple look and feel in any product design? [7]