

ALLAMA IQBAL OPEN UNIVERSITY, ISLAMABAD
(Department of Computer Science)

WARNING

1. **PLAGIARISM OR HIRING OF GHOST WRITER(S) FOR SOLVING THE ASSIGNMENT(S) WILL DEBAR THE STUDENT FROM AWARD OF DEGREE/CERTIFICATE, IF FOUND AT ANY STAGE.**
2. **SUBMITTING ASSIGNMENTS BORROWED OR STOLEN FROM OTHER(S) AS ONE'S OWN WILL BE PENALIZED AS DEFINED IN "AIOU PLAGIARISM POLICY".**

Course: Software Architecture (3482)
Level: BS (CS)

Semester: Spring, 2013
Total Marks: 100

ASSIGNMENT No. 1

Note: All questions carry equal marks.

- Q. 1 a) What is software Architecture? Why we study software architecture?
b) What is the difference between reference architecture and an architectural pattern?
- Q. 2 a) Describe the characteristics of module, component-and-connector and allocation structures of software architecture.
b) Discuss in detail the reference model of software architecture.
- Q. 3 a) Differentiate between business and architecture qualities.
b) Describe the features of different quality attribute scenarios.
- Q. 4 Write notes on the following:
a) Modifiability Tactics
b) Performance Tactics
c) Skelton System
- Q. 5 a) UML is widely used language. Discuss why it is important for good quality software?
b) Discuss security requirements for software.

ASSIGNMENT No. 2

Total Marks: 100

Note: All questions carry equal marks.

- Q. 1 a) Explain the life cycle of software architecture.
b) Differentiate Architecture and structure of software.
- Q. 2 a) Discuss the role of view fusion in software architecture.
b) Discuss the process of documenting view.
- Q. 3 a) Define Product Lines? Also explain architecture for product lines in detail.
b) Discuss the need of performance analysis.
- Q. 4 a) Compare the ATAM and CBAM methods of architectural analysis.
b) Define and explain reconstruction.
- Q. 5 a) Describe database construction and information extraction in detail.
b) Compare layered architectural style with shared repository style.
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3482 Software Architecture

Credit Hours: 4 (4+0)

Recommended Book:

Software Architecture in Practice by Len Bass, Paul Clements, Rick Kazman

Course Outlines:

Unit No. 1 Introduction to Software Architecture

Software Processes and the Architecture Business Cycle, Software Architecture Architectural Patterns and Structures, Reference Models and Reference Architectures, Case Study.

Unit No. 2 Quality Attributes

Functionality and Architectures, quality Attributes, System Quality Attributes, Business and Architecture Qualities

Unit No. 3 Quality Tactics

Introducing Tactics, Availability and Modifiability Tactics, Performance and Security Tactics, Testability and Usability Tactics, Case Study

Unit No. 4 Architecture Design

Life Cycle Architecture, Designing the Architecture, Formatting the Team Structure, Skelton System, Case Study

Unit No. 5 Architecture Documentation

Uses of Architecture Documentation, Views, Documenting a View, Unified Modeling Language

Unit No. 6 Architecture Reconstruction

Information Extraction, Database Construction, View Fusion, Reconstruction,

Unit No.7 Analyzing Architecture

Overview, Analysis Methods, Architecture Evaluation, Architecture Design Decision making, Case Study

Unit No. 8 Software Product Lines

Overview, Software Product Lines, Scoping, Architecture for Product Lines, Case Study

Unit No. 9 Software Architecture in future

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