

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: Design Pattern (3481)

Level: BS (CS)

Semester: Spring, 2013

Total Marks: 100

Pass Marks: 40

ASSIGNMENT No. 1

Note: All questions carry equal marks.

- Q.1 Define the term "Design". Also describe the "Design Patterns" in detail. Write a detail note on "Catalogue of Design Patterns".
- Q.2 How design Patterns can solve Design Problems? Give example to support your answer.
- Q.3 Explain the basics of Abstract Factory. Define "Factory Method" with the help of an example.
- Q.4 What is the difference between prototype and singleton? Explain your answer with the help of example. Also describe the technique of selecting a good Design-Pattern.
- Q.5 Write a not on the following:
- | | |
|--------------------------------------|-----------------------------|
| a. Discussion of Creational Patterns | b. Organizing the Catalogue |
| c. Use of Design Pattern | d. Builder |

ASSIGNMENT No. 2

Total Marks: 100

Pass Marks: 40

Note: All questions carry equal marks.

- Q.1 Describe an overview of Structural Pattern. Also explain the following terms in detail:
- | | | |
|------------|-----------|--------------|
| a. Adapter | b. Bridge | c. Composite |
|------------|-----------|--------------|
- Q.2 What is meant by Flyweight? Describe with the help of an example. Also elaborate the following terms:
- | | |
|--------------|-----------|
| a. Decorator | b. Facade |
|--------------|-----------|
- Q.3 Write a detail note on "Chain of Responsibility". Also explain the concept of Observer, State and Strategy.

Q.4 What is the difference between Interpreter and Mediator? Explain with the help of examples.

Q.5 Write a note on the following:

- | | |
|------------------------|------------|
| a. Structural Patterns | b. Command |
| c. Memento | d. Proxy |

3481 Design Patterns

Credit Hours: 3(3, 0)

Recommended Book: Design Patterns Elements of Reusable Object-Oriented Software by Erich Gamma, Richard Helm, Ralph Johnson and John Vissides

Course Outline:

Unit#1 Introduction

Introduction, Describing Design Patterns, The Catalog of Design Patterns, Organizing the Catalog, How Design Patterns Solve Design Problems, Selecting a Design Pattern, Use of Design Pattern

Unit#2 Creational Patterns-I

Abstract Factory, Builder, Factory Method

Unit#3 Creational Patterns-II

Prototype, Singleton, Discussion of Creational Patterns

Unit#4 Structural Pattern-I

Adapter, Bridge, Composite, Decorator, Facade

Unit#5 Structural Pattern-II

Flyweight, Proxy, Discussion of Structural Patterns

Unit#6 Behavioral Patterns-I

Chain of Responsibility, Command, Interpreter, Iterator, Mediator, Memento, Observer, State, Strategy

Unit#7 Behavioral Patterns-II

Template Method, Visitor, Discussion of Behavioral Patterns What to Expect from Design Patterns, A Brief History, The Pattern Community, An Invitation, A Parting Thought

Unit#8 A Case Study: Designing a Document Editor-I

Design Problems, Document Structure, Formatting, Embellishing the User Interface, Supporting Multiple Look-and-Feel Standards

Unit#9 A Case Study: Designing a Document Editor-II

Supporting Multiple Window Systems, User Operations, Spelling Checking, Hyphenation, Summary