

Practical Workbook
CS-325
Software Development and Testing



Name : _____

Year : _____

Batch : _____

Roll No : _____

Department: _____

Department of Computer & Information Systems Engineering
NED University of Engineering & Technology

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Software Development and Testing



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INTRODUCTION

This workbook has been compiled to assist the conduct of practical classes for CS-325 Software Design and Testing. Practical work relevant to this course aims at providing students a chance to explore advanced processes and methods for developing and testing software systems using sound engineering principles.

The Course Profile of CS-325 Software Design and Testing lays down the following Course Learning Outcome:

“Explore modern techniques for software development and testing”

All lab sessions of this workbook have been designed to assist the achievement of the above CLO. A rubric to evaluate student performance has been provided at the end of the workbook.

This list covers a wide range of software engineering practices, focusing on essential design patterns, testing methodologies, and system documentation. Lab Sessions 1 till 6 include exploring LaTeX for professional documentation, applying object-oriented principles in Java, and practicing various design patterns such as Adapter, Façade, and Structural patterns to manage and enhance system functionality. Additionally, the list emphasizes hands-on experience with behavioral design patterns, to refine the communication between objects.

The second part of the manual emphasizes testing, verification, and validation techniques crucial for maintaining software quality. Labs Session 7 till 10 includes topics such as writing test cases for web applications, practicing testing frameworks, learning verification and validation techniques ensuring that software meets both specifications and user needs through iterative testing. Lab 11 focuses on formal methods tool using mathematical techniques to precisely define and verify software specifications and requirements. Lab 12 and 13 include IoT design patterns and practices, providing a practical approach to building embedded systems. Lastly, in Lab 14 an open-ended lab provides an opportunity to integrate and apply all these concepts, allowing for hands-on learning and real-world application.

This workbook is designed to equally assist instructor and student, practically realizing theoretical concepts of the course, and providing in-depth understanding and elaborate development & testing experience.

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