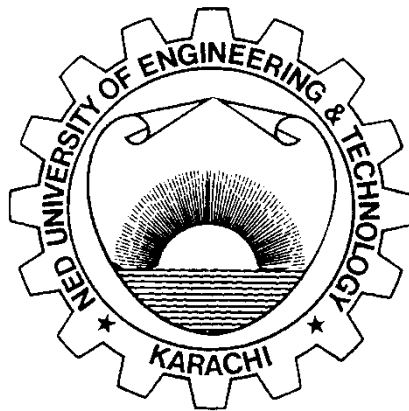


Practical Workbook

CS-302

Software Engineering



Name _____
Year _____
Batch _____
Roll No _____
Department: _____

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

Practical Workbook

CS-302

Software Engineering



Prepared by:

Ms. Fakhra Aftab

Revised in:

September 2019

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

INTRODUCTION

This workbook has been compiled to assist the conduct of practical classes for CS-302 Software Engineering. Practical work relevant to this course aims at providing students a chance to learn the complete Software Development Life Cycle (SDLC). SDLC has to be efficiently organized, and it is for this very reason that CASE (Computer Aided Software Engineering) tools are developed. With the help of CASE, the entire process can be automated and coordinated within the developed and adopted system life cycle. Therefore, variety of different example tools is covered in this workbook. In this way, students will be able to interact with modern CASE tools and can fully automate SDLC.

The Course Profile of CS-302 Software Engineering lays down the following Course Learning Outcome:

“Demonstrate the use of modern tools and 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.

Lab session 1 explains the software documentation with the basic features of very powerful documentation tool ‘LaTeX’. Lab Session 2 covers Project Management tool ‘MS-Project’ for creating project plans. Lab sessions 3 - 6 are about learning the significance of Unified Modeling Language (UML) Diagrams in SDLC. These diagrams are developed using an open source tool named as ‘StarUML’. Lab session 7 discusses the Software Design Patterns. Lab session 8 deals with Program Testing Techniques in SDLC. Lab sessions 9 - 11 demonstrate Web Development & Testing using Agile Project Management (Scrum). Lab sessions 12 & 13 elaborate Version Controlling System via Git & GitHub. Lab session 14 explains Complex Engineering Activity. Appendix A covers more features of LaTeX. Rubric sheets for student’s evaluation are also attached.

CONTENTS

Lab Session #	Title	Page #
1	Explore the usage of any documentation tool in Software Development Life Cycle (SDLC)	01
2	Practice any project management tool to prepare a project plan	11
3	Carry out user view and structural view analysis for the suggested system: Use Case & Class Diagrams	19
4	Practice function oriented diagram for the suggested system: Data Flow Diagram	25
5	Practice behavioral view diagrams for the suggested system: State Transition, Sequence and Collaboration Diagrams	31
6	Practice Collaboration and Deployment View Diagrams for the suggested system	39
7	Use Design Patterns in SDLC	45
8	Use the principles of program testing in SDLC	53
9	Practice Web Development & Testing using Agile Project Management (Scrum)	59
10	Demonstrate first sprint and plan second sprint of Web Development & Testing using Scrum	65
11	Demonstrate second sprint and plan second sprint of Web Development & Testing using Scrum	71
12	Explore Code repository tools for Version Controlling System (VCS)	77
13	Practice conflict resolution for multiple contributors in VCS	83
14	Complex Engineering Activity	87
	Appendix A: LaTeX Formatting Features	88
	Rubric Sheets	90