SIR PADAMPAT SINGHANIA UNIVERSITY, UDAIPUR
SCHOOL OF ENGINEERING
Software Engineering Lab

Code: CS207

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Software Engineering Lab Manual :-

Aim: The aim of this assignment is to test your ability to design a medium sized software system and to demonstrate your ability to manage and present clearly a portfolio of design documents and supporting information

Case Study: -
Student has to select the following automated system and perform the analysis and design of the system. They have to generate the documentation as per SDLC.

Quiz System.
Online ticket reservation system.
Student marks analyzing system.
Expert system to prescribe the medicines for the given symptoms.
ATM system.
Stock maintenance.
Banking System.
Library System.
Online Book Shop System.
University System.

Lab Assignment or reports are prepared as per the sequence mentioned below:

1. **Introduction of system (system reference)**.
   Objective: - Thorough study of the problem – Identify project scope, Objectives, Infrastructure
   - Introduction
   - Identification of Need
   - Preliminary Investigation
   - System Development Methodology

2. **SDLC Objective**

3. **Process: Process Model for the Project**.

4. **Project Plan**

- Economic Feasibility
- Technical Feasibility
- Operational Feasibility
- Behavioral Feasibility

5. SRS: Software Requirement Specification

Objective: - Describe the individual Phases/ modules of the project, Identify deliverables

6. Analysis Modeling

Objective: - Use work products – data dictionary, use case diagrams and activity diagrams, build and test lass diagrams, sequence diagrams and add interface to class diagrams.

- Analysis of The System Structure:
- Functional Model
- Project Model
- Dynamic Model
- Design of System
- Database Design

For UML you have to use Rational Rose or any other analysis tool for eg: StarUml

Draw the following views or diagram for your application software.

- Use case view
- Class view
- Component view
- Database design
- Activity diagram
- Sequence diagram
- State chart diagram
- Collaboration diagram
- Deployment diagram

7. **Project Design**

- Modules of Project
- Roles in Project

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8. **Project Coding.**

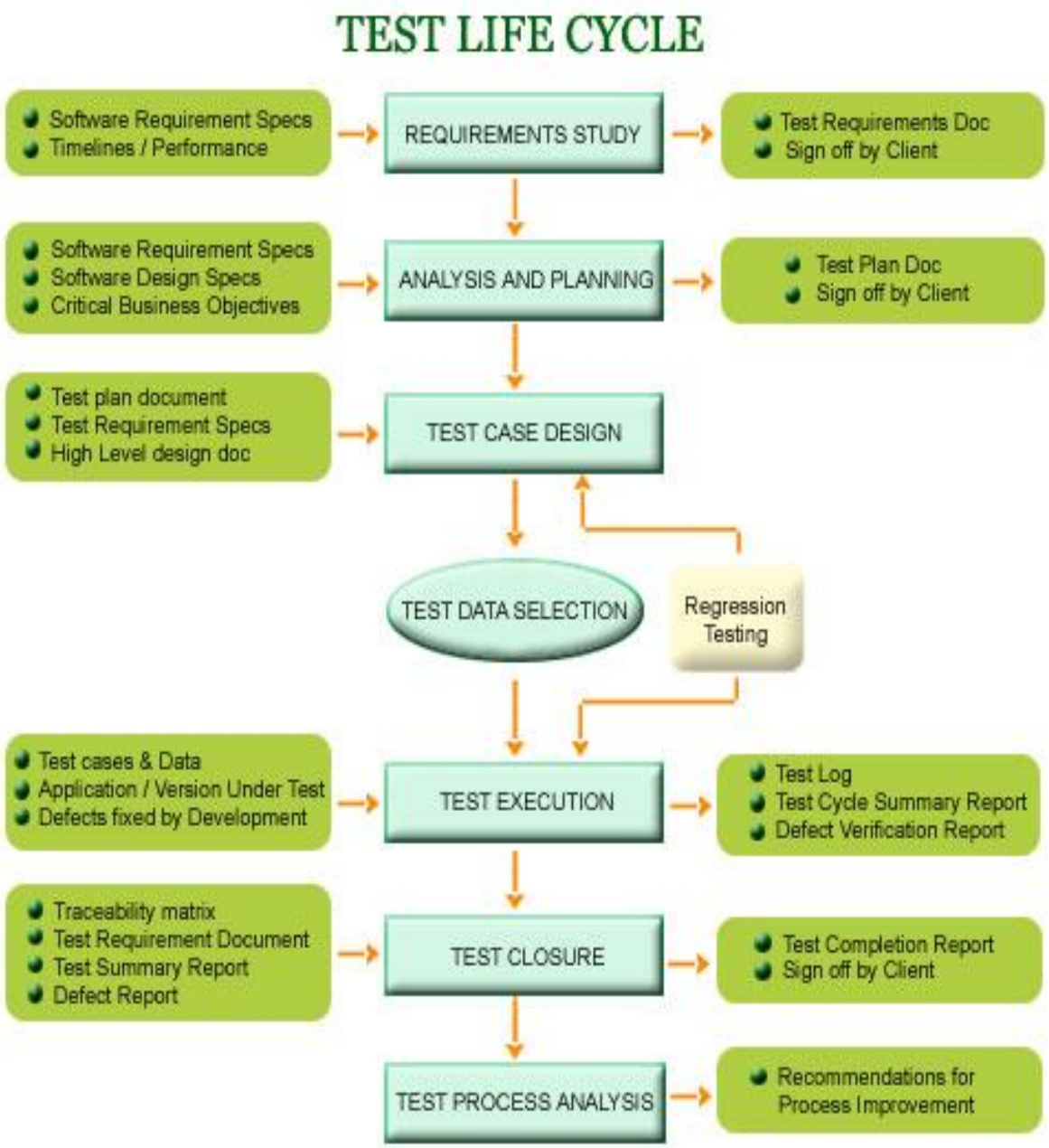
1 Project Testing: Test case design for different testing techniques.

Objective: - Prepare test plan, perform validation testing, coverage analysis, memory leaks, develop test case hierarchy, Site check and site monitor.

- Objective of Testing

- Types of Software Testing
- Software Testing Life Cycle
- Testing Process
- Test Cases

Perform the testing of the application, whatever you have developed in Lab. Using various testing methods such as white box, black box testing strategies. And generate the test cases as shown below for each application you have developed in lab.



Examples as shown below, the test cases are developed for a web page.

Test Cases
Module Name: - User Registration From.
Test Case ID: - REG1

Test Case Description:-Verifying possible outputs of registration form applying all possible combination of inputs and simultaneously and checking current status.
Input Specification:-Various numbers of tokens which generate several condition like

- Enter the User Id of at most 8 characters.
- Enter the password of at most 6 characters.
- Re-Enter the password.
- Check user type, whether Admin or General.
- Enter Email Id in proper Format.

Output Specification:-

When all mandatory information will be filled properly then user got an acknowledgement message.
In case of any wrong information, corresponding message of error will be displayed and registration will not be submitted until user will fill all mandatory information with proper format.

Various Test Cases for Registration Form

Test Cas ID	Test Case Description	Test Input Data	Unexpected Result	Actual Result	Status
REG1.1	Enter the User Id Alpha nu character	Admin	Error Message "at most 8 char."	Admin	Pass
REG1.2	Enter the Passwo In alpha numeric Character	Password	Error Message "At most 6char."	Passwo	Fail
REG1.3	Enter the Passwo In alpha numeric Character.	Passwo		Passwo	Pass
REG1.4	Re-enter Passwo:	Pass	Error message "Password doesn't Match Re-enter"	Passwo	Fail
REG1.5	Re-enter Passwo:	Passwo		Passwo	Pass
REG1.6	Select Role Radio Button	None	Error message "Select Role"	Admin / General	Fail
REG1.7	Select Role Radio Button	Select Admin		Admin	Pass
REG1.8	Enter the Email I	aa@ddd	Error message "Enter in Proper Format ab@xyz.com"	abc@xyz.com	Fail
REG1.9	Enter the Email I	aa.dd.com	Error message "Enter in Proper Format ab@xyz.com""	abc@xyz.com	Fail
REG1.10	Enter the Email I	abc@xyz.com		abc@xyz.com	Pass

Software Required:-
Tools: Rational Rose , Star Uml
Languages: C/C++/JDK 1.3,JSDK, INTERNET EXPLORER, UML
Front End: VB, VC++, Developer 2000
Back End: Oracle, MS-Access, SQL

List of Exercises:

Experiment No.	Lab Tentative	Title
1	Week 1	Prepare a (SRS) software requirement specification of a small application using any database or file as back-end.
2	Week 1	Draw the database-table diagram or E-R diagram, analyze table interdependency and implement integrity constraint in the schema
3	Week 2-4	Develop the application in any language (c, c++, vb, .net)
4	Week 5	Test the quality of the software by design a matrices against the result produce by the application.
5	Week 5	Design the test cases for black box testing. (as given in manual.)
6	Week 6	Apply the following test cases to the application and note the result of test case.
7	Week 6- 7	Assume that test cases are failed then refine the application or modify the application to pass the test cases.
8	Week 8	Introduction to UML, brief about the tool we are using to generate views for the analysis phase.
9	Week 9	Implement use case diagram.
11	Week 10	Implement the class diagram.
12	Week 10	Implement Association, Aggregation and Inheritance in class diagram.
13	Week 11	Implement Collaboration and Sequence Diagrams
14	Lab 12	Implement State Chart Diagram.
15	Week 12	Implement activity diagram.
16	Week 13	Implement component and deployment diagram.
17	Week 14-16	Prepare project documentation on any application or automated system using SDLC methodologies as given in lab manual.