Charotar University of Science and Technology [CHARUSAT]

Chandubhai S. Patel Institute of Technology [CSPIT]

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Lab Manual

Subject code	:	CE343	Semester	:	5	Academic Year	:	2022-23
Subject name	:	SOFTWARE ENGINEERING						

Practical – 1

Aim:

[A]Role of Software

Background: Software has made the world a global village today. The impact of software spans across almost all aspect of human life. All organizations, Institutions and companies are leveraging the potentials of software in automating the critical functions and eliminating manual interventions. Software is also a predominant are for trade and export especially for the countries like India. Domains like health care, Airlines, financial Services, Insurance, retails, Education, and many more have exploited software and still there a lot of the scope for software to create impact and add values in multiple dimensions.
Problem Description: In the context of this background, identify the areas (or application or systems) how software has been leveraged extensively in the following domains
1. Health Care 2. Airlines 3. Banking Insurance 4. Retail 5. Education

[PPT Presentation is must by group of students allocated by faculty members, each batch must cover at least one specific domain.]

[B] Role of Software Engineering in IT industry:
Case study of industry with live survey of their employee and team members for usage and usefulness of Software engineering principals, documentations, SE practices, Standards, CMM/ISO, etc.
[Students need to do prepare questionnaires and do survey and interview to gather information and find conclusion about role of SE in IT industries]

Practical – 2

Aim:

Study and compare different software process models and compare them based on cost, simplicity, risk, involvement of user, flexibility, maintenance, integrity, security, re-usability, and requirement.

[Students need to study all models and present GroupWise, particular batch must cover each process models and finally students have to select particular process model for their SGP project with proper assessment and justification.]

Practical-3

Aim:

Design interview, record review, brain storming, questionnaires and observation techniques to elicit requirements for the given project.

[Student must record, capture video, survey, photographs pics compulsory for all techniques of requirement gathering]

Knowledge Required: Knowledge regarding the requirements gathering.

Theory/Logic: Requirement gathering is the practice of researching and discovering the elements of system from users, customers and other stakeholders.

Sample Questions:

1. What are the objectives of your organization? What are you trying to accomplish? What are the top priority business goals?
2. What are the business objects that you are attempting to achieve with this product?
3. What is the goal associated with this product?
4. What is the problem you are facing/noticed with the current scenario?
5. What problem will be solved with product?
6. How you want us to develop this product?

Practical-4

Aim:

Determine and analyze the functional non- functional Requirements for a given project and then Design System Requirement Specification (SRS) document for a given project (IEEE Standard).

Knowledge Required: Knowledge regarding the requirements of a project.

Theory/Logic:

Standard Format for Functional Requirements :

Functional requirements describes how a product must behave, what its features and functions.

F1 : Authentication and Authorization

- Login: The user can login to the system with his/her username and password.
  - Input: Username and Password.
  - Output: Employee Dashboard , Admin Dashboard
  - Processing: Username and password verify from database if user exist in database then user interface will be displayed according to their role.
- Logout: The users can logout from system.
  - Input: 'Logout' option is selected.
  - Output: User login Screen will be displayed.

Practical – 5

Aim:

Develop a Software Project Management Plan using Microsoft Project 2003/2007, JIRA/Redmine tool.

Classroom link: https://classroom.google.com/c/MTE2MDMzMDkyODA5

Aim:

Calculate cost estimation for the project using FP calculation and COCOMO model. After manual calculation use COSTAR/SYSTEM STAR Tool to calculate and explore other parameters for estimation of cost of your project.

Software Required: COSTAR / SYSTEM STAR Tool

Knowledge Required: Number of inputs, outputs, records, inquires to the projects.

Practical – 6,7

Aim:

Prepare design document for your project (UMLet 14.2, SmartDraw, Visio 2007)

1. Procedure oriented methodology (DFD up to level 2, Structurechart) and
2. Object oriented methodology (UML)
   GUI Design (ForeUI, PencilTool)

Software Required: Microsoft Visio, Pencil Tool, ForeUI, UMLet 14.2, SmartDraw

Knowledge Required: Procedural Approach and Object Oriented Approach of Software Development.

Theory/Logic: Students has to prepare Case Study report on CASE Tools and Testing Tools

like
Win Runner, Load Runner and Selenium Tool, Runtime testing tools.

Practical – 8

Aim:

Design coding standards and guidelines for a given project (C, C++, Java, HTMLetc.)

Knowledge Required: Knowledge about Coding Standard and Coding Convention

Implementing coding Guidelines

- All the codes should be properly commented before being submitted to the review team.
- All curly braces should start from a new line.
- All class names should start with the abbreviation of each group. For example, AA and CM can be used instead of academic administration and course management, respectively.
- Errors should be mentioned in the following format: [error code]: [explanation]. For example, 0102: null pointer exception, where 0102 indicates the error code and null pointer exception is the name of the error.
- Every 'if statement should be followed by a curly braces even if there exists only a single statement.
- Every file should contain information about the author of the file, modification date, and version information.

Reference Link:

•Practicing with 'Version Control System-GIT'.
https://opensource.com/article/19/5/practical-learning-exercise-git
•Explore the Jenkins DevOps
https://www.guru99.com/jenkins-tutorial.html

Practical –9

Aim:

Design the following for given project (Black Box Testing)

1. TestCase
2. TestSuite
3. TestingStrategy

Also Design Test Cases using White Box Testing, Gray Box testing.

Software Required: Software Testing tools.

Test Case No	Test Scenario	Pre-Condition	Test Steps	Test Case	Test Data	Expected Result	Actual Result	Post Condition	Status
1	Invoice	All data should be stored in database	Based on Service type id, invoice should be shown with service name.	Enter valid service type id	<Valid service type id>	Data is shown	Data is shown	Invoice list view is shown	Pass
				Enter invalid service type id	<Invalid Service type id>	Invalid service type id	Invalid service type id	Re-select or enter the service type name	Pass
			Based on client id, invoice should be shown with client name.	Enter valid Client id	<Valid Client Id>	Data is shown	Data is shown	Invoice list view is shown	Pass
				Enter invalid Client id	<Invalid Client Id>	Invalid Client Id	Invalid Client Id	Re-enter or fetch exist client id	Pass

- **Reference Link**
- Selenium Automation (Web driver, TestNG)

  https://www.guru99.com/selenium-python.html

- J-Unit Reference link:
  https://www.guru99.com/junit-tutorial.html