Defect Tracking System

V.Venu Gopal[1], G.Anjan Babu[2]

[1]*Student , Dept. of MCA, SVU. College of CM&CS, Tirupati.*
[2]*Professor, Dept. of MCA, SVU. College of CM&CS, Tirupati.*

Abstract- **Testing plays one of the most significant roles in application life cycle management testing has got most significant place. Defects can occur at different phases like unit testing, system testing, client's usage etc. These defects need to be logged and tracked effectively to meet customer's requirement and deadlines. This project automates the entire Defect Tracking and Monitoring since its injection time, and is broadly divided into three modules, namely, the Admin Module and the Defect Tracking Module.**

INTRODUCTION

The Admin Module takes care of defects administration and provides the following interfaces to manage:
- Severities
- Users
- Projects
- Status
- Work flow

The Defect Tracking Module allows the users to log the defects during different phases of the application life cycle which are assigned to the respective persons by the managers. Defects will be monitored from the Open status till the closed status. Various interfaces are provided to effectively manage the said defects.

The following are the modules:

ADMIN MODULE

This module provides interfaces to categories, projects, severities, status, work flow, users, etc. The Admin home page consists of following links or sub modules
- User page: The user details are registered in this page. The administrator provides unique login id to the newly appointed employee. User page consists of all the employee details like
  - First name
  - Last name
  - Middle name
  - Email id
  - Address
  - Phone no

Designation of the employee in the organization is entered in user page.

Each department has been grouped under different group id, relating to the designation of the employee the administrator assigns the group id.

- Project Registration: The Company provides all the information to administrator about new projects to be done in the company. The administrator has the responsibility of managing the whole data.

The new project details are registered in project registration form. It starts with project name, description of the project. Start date and end date depending upon the client's deadline. The client name, project manager assigned to the particular project and the technology used to develop the project .The technology may be opted by project manager or by client specification.

- Priority: The priority will be assigned to project by administrator. Depending on the team size and time interval of the project, administrator assigns the priority to the project.

EX: consider an ERP project requires more time period and effort for completion of project, so administrator assigns that project as of High priority. Priority can be High, Low, medium.

- Status: The administrator creates status to the defect in the project. The status depends on whether the employee has checked the defect or not. When tester submits the defect the status will be under open state. The respective employee rectifies the defect then the status will be under close state. The other status assigned is pending and follow-up. Each status newly created will be automatically assigned a status-id.

- Project release: This page consists of project release name i.e. when the project will be released along with project release Id along with respective project Id.
- Category: The administrator creates a new category for each project. The category name depends on type of project, whether it is an web application project, Intranet, ERP project.
- Testing type: This page consists of different testing types performed in the company. The administrator enters various types in testing type form. Various testing types are
  ➢ Unit Testing
  ➢ Integration Testing
  ➢ System Testing
  ➢ Black box Testing
- Group: Each project will be assigned a group name. A new group will be created. If the group already exists it shows error message. Each group name will be assigned group number.
- Severity page: Severity means degree of something undesirable. Similarly some defects can lead to failure in project in future, so administrator describes the following severities
  ➢ Critical
  ➢ Normal
  ➢ Tolerable
  ➢ Difficult

The tester uses this severity while assigning the defects to the respective employee. These severities define the condition of the defect.

- Role: Since the project is divided into many modules. The administrator creates new roles such as
  ➢ Module In charge
  ➢ Testing In charge
  ➢ Database In charge
  ➢ Coding In charge
  ➢ Error maintainer
- Assign to project: The administration assigns the employee to the project depending on employees or Software engineer's experience, previous project experience etc. The page consists of list of employees. Administration selects required employees for the project from the table. The page also displays project Id, start, and end date of project.

- Role to project: The administrator assigns different roles to particular employee, he can also assign more than one role to an employee. The employee role in the project is stored in roleuser table. The table consists RoleID, EmpID, ProjectID.

Each main page is provided by logout where Administrator, Manager, Employee, Tester exits from the system.

SYSTEM REQUIREMENTS

Software Requirements:

Operating System	: Windows95 and Above
J2EE Technologies	: Serve lets, Jsp , Back
End	: MS Access (JDBC)
Browser	: Internet Explorer
Web Server	: Apache Tomcat Web Server 5.0

Hardware Requirements:

Processor	: Any Processor above 1GHZ speed
RAM	: 256MB
Cache	: 512KB
Hard Disk	: 40GB OR more

DEFECT TRACKING MODULE

This module allows users (testers and manager) to log the defects during different phases of application life cycle and assigned the defects to the respective person (employee).

Defects will be monitored from the open status till the closed status. Various interfaces are available to effectively manage the said defects. This Bug tracking module consists of 3 sub modules

- Tester defect module.
- Project Manager defect module.
- Employee module.

The Defect tracking module can be systematically represented as,

TESTER DEFECT MODULE

This module is responsible to detect the defects in the respective module and posts the defect build to the respective software engineer or employee and project manager to rectify the defect in the module.

This module allows providing the status of the defect was posted to the software engineer and projecting manager.

The tester defect module consists of two sub modules

✓ Defect: Defect tracking and reporting is one of the most important responsibilities of the tester. In the defect registration page tester reports all the defects occurred during testing process. Detailed test design is the process of specifying the details of the test approach for a software feature or combination of features and identifying the associated test cases.

The basic steps of detailed test design

➢ Assigning priorities to these items, based on risk.
➢ Developing high-level test designs for groups of related test items.
➢ Designing individual test case design from the high-level design.

Test defect identification is the process of identifying all target items to be tested. The first step of test item identification is careful study, decomposition, and analysis of the requirement and functional design specification.

After testing each module tester communicates to the particular employee based on his user name (login). Tester lodges the defect to employee. The tester can categorize the defect from a list of common problem areas like performance, security, user interface, data types.

The tester submits the cause of the defect and complete description of the defect. Software engineer or employees rely on accurate defect information so that he can re-test fixes. The tester notices the particular employee, about severity of the open defect in the module, whether the defect is critical, normal, tolerable or difficult. The type of severity defines the position of the defect in the module. If it is critical then it should be immediately solved.

Some defects are caused due to employee error so such errors could not be reproduced. Tester specifies the defect should be reproduced or not. For a confirmed defect, the system assigns a unique defectId number and notify the developer by mailing that this issue needs his attention. The employee verifies, modify the defects priority level.

The tester provides information that defect occurred during these testing types performed

❖ unit Testing
❖ Integration Testing
❖ System Testing
❖ Acceptance Testing.
❖ Unit Testing

Unit or module testing is the process of testing the individual components (subprograms or procedures) of a program. The purpose is to discover discrepancies between the module interface specification and its actual behavior.

Integration Testing: Integration testing is the process of combing and testing multiple components together. The primary objective of integration testing is to discover errors in the interfaces between the components.

➢ System Testing: System testing is the most misunderstood and the most difficult testing activity. System testing is not the process of function testing the completely integrated system. Because there is no methodology system testing requires a great deal of creativity. The tester has to thinking from the perspective of the user, and the problem the user is trying to solve. System tests are designed by analyzing the functional design specification or user documentation.

➢ Acceptance Testing: Acceptance testing is the process of comparing the end product to the current needs of its end users. ALPHA and BETA testing are employed as a form of acceptance testing. Both involve running and operating the software in production mode for a pre-specified period.

✓ Status: The status report consists of the defect information assigned to the employees. The system assigns unique defectId when defect is lodged. The status report consists of all the information like lodged date, assignee (employee), the cause for the defect and the status.

Whenever the tester assigns defect the status of the defect will be open. When the employee logins into system and modifies the defect then the status will be under closed state. The status report keeps information of all the defects assigned to particular employee after performing testing.

The relevant file attached along with defect registration page could be,

➢ Test report
➢ Log file
➢ Screen shot.

EMPLOYEE MODULE

This module is responsible to go through the defect Build that was sent by the testing engineer to his account. The software engineer or employee can see the defect details that were maintained in the build. If the employee unable to fix the bug he can post the defect to other employee or project manager.

The employee is provided by separate login account, he logins into the system by entering user name and password. Main page consists of following sub modules

➢ Defect: Defect page consists of all the information send by the tester. The employee or software engineer looks at the cause of the defect and complete description of the defect. The status of the defect would remain open until an individual with appropriate authority closes the status (modifies the defect). He can fix the defect to other employee working in same project or manager. The status of the defect will be under closed state. The relevant file attached along with defect registration page could be

❖ Test report
❖ Log file
❖ Screen shot

This attachment helps the software engineer or employee to trace these defects easily and solve the defect.

➢ Assigned Defects: Assigned defect page consists of all the information about the defects assigned by tester. This page also consists of defects assigned by other employees, manager. This page displays list of defects or bugs along with defectId, project name and assignee.

➢ Status: The status report consists of details of the defect who has assigned and the cause of the defect. This helps the employee to identify the defect easily. Status report also shows the current status of the defect.

➢ Reports: Report provides all information performed in the system. The employee can search the required information based on any one of the following

➢ Project id
➢ Defect id
➢ Project name
➢ Employee name

PROJECT MANAGER MODULE

This module is used to monitor all defect status of employee and test engineer. The project manager has all the privileges to make modification and fix bugs to employees. Quality management help track and monitor defects related to development and testing process. The project manager should be confident in his own methods of achieving quality product and client satisfaction.

Project Manager Module has four sub modules

➢ Defect: Project manager has list of all defects assigned by the tester to respective employees. He has only authority to make changes in the defect registration page. Manager can also re-fix the defect to employees if the defects are still under open state.

➢ Assigned Defects: Employee can transfer the defects to project manager if he is unable to modify the defect (provides the reason).Manager can deliver the defect to another employee working in same project so that the defect can be handled quickly. This assigned defect page consists of all the defects assigned by employees.

➢ Status: With defect status report the project manager can check the progress in real time

❖ How many critical bugs are still open?
❖ As the project nears its end date, are product defects closing at a faster rate than new ones being opened?

➢ Reports: Reports can help managers make decision about resource staffing for current and future project.

➢ Objective of the Study:

➢ The proposed system provides on-line capability to fix defect data including severity, regression, testing type, cause, and description of the defect to particular employee or software engineer. Most organizations track defect and changes via defect or change report. Common names of report include Software problem report, Trouble report, error report, bug report, defect report and software change report. This system reduces the misunderstanding when communicating defects data between software engineers and testing engineers.

➢ The "DEFECT TRACKING AND MONITORING SYSTEM" provides all information about defects occurred after testing a

particular module to software engineer. The testing engineer fixes the defect along with following information, the main cause of defect along with complete description of defect like the severity of the defect whether it is critical, normal or tolerable.