Bug Tracking System

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ABSTRACT — **Bug Tracking for Improving Software Reliability (BTS) is an automated system that can be useful to employees and the managers in any functional organization. Bug Tracking System gives the facility to define the tasks in the organization and also allows the managers to track the bugs spent by the employee for that particular task. A report generation facility is supported in BTS that allows the managers to analyze which are those skills by employee are utilized and those which are not utilized. This tool can help managers for Bug estimation per project or application. This tool helps employees to document their Bugs and analyze this project aims at creation of a Bug Tracking System. This project will be accessible to all developers and its facility allows developers to focus on creating the database schema and while letting the application server define table based on the fields in JSP and relationships between them. This system provides the following facilities.**

The objectives of this system are:

1. To keep track of employee skills and based on the skills assigning of the task is done to an employee.

2. Employee does bugs capturing. It can be done on daily basis.Various Reports are generated by this System for an employee and as well as to a manager.

A. Introduction

Vision:
The purpose of Bug Tracking for improving software reliability is to provide better service to the administrator or useful for applications developed in an organization.
Scope:
The Bug Tracking for Improving Software Reliability is a web based application that can be accessed throughout the organization. This system can be used For logging g bugs against an application/module, assigning bugs to team members and tracking the bugs to resolution. There are features like email notifications, user maintenance, user access control, report generators etc in this system.

Definition, Acronyms, Abbreviations:
Bug - A software bug (or just "bug") is an error, flaw, mistake, failure, or fault in a computer program that prevents it from behaving as intended (e.g., producing an incorrect result). Most bugs arise from mistakes and errors made by people in either a program's source code or its design, and a few are caused by compilers producing incorrect code.

B. Overview:
Bug tracking is the process of reporting and tracking the progress of bugs from discovery through to resolution, where a bug is defined as a deviation from requirements. Other terminology frequently used to describe this process include

1. Problem tracking
2. Change management
3. Fault management
4. Trouble tickets

Bug tracking systems are most commonly used in the coding and testing phases of the software development process. However, tracking systems can in fact be used for many other purposes such as general issue tracking, simple task lists, help desk situations or contact management, where the focus is on the tracking aspect rather than what is being tracked. Even in software development, tracking systems are quite often not limited to simply tracking bugs, but extended to track feature requests or enhancements as
Well as enquiries

B. System Analysis

Existing System:
Defect Tracking System is a web-based application designed to help a workgroup keep track of Defects and tasks via a shared central resource. The system was designed specifically with the IT department in mind, for logging bugs aga where quick access to shared data and history is a requirement, both from an internal organizational perspective, as well as to fulfill the needs of the customers.
It provides one roof solution for all the Defects issues in the software development. It doesn't provide any kind of solution to any kind of problem. It only acts as a means to transmit the issues and their details to the concerned programmers with accuracy. It is a tool that helps in

providing the solution in right time. In addition to all these, it also maintains the preferences, customized settings, colors, priorities, users,etc.It is very critical to solve different kind of reports at a time.

D. Limitations in Existing System:

1. Information retrieval is a very big process.
2. Lack of organization of the files may porn to information loss due to accidental deletion of files.
3. No security because the files are visible to the users.
4. Report generation will be a big task.

E. Proposed System

The Proposed system is a browser which is completely related to online system, which provides the centralized database. It stores bugs data and description of the particular bug data. It can also create Excel reports and PDF documents based on the information in its database.

1. *Advantages over Existing System*:

1.1. The performance is increased due to well designed database.
1.2. Security is increased
1.3. Time saving in report generation
1.4. Easy to update the details

2. Economic Feasibility

Economic feasibility attempts 2 weigh the costs of developing and implementing a new system, against the benefits that would accrue from having the new system in place. This feasibility study gives the top management the economic justification for the new system.
A simple economic analysis which gives the actual comparison of costs and benefits are much more meaningful in this case. In addition, this proves to be a useful point of reference to compare actual costs as the project progresses. There could be various types of intangible benefits on account of automation. These could include increased customer satisfaction, improvement in product quality better decision making timeliness of information, expediting activities, improved accuracy of operations, better documentation and record keeping, faster retrieval of information, better employee morale.

3. Operational Feasibility:
Proposed project is beneficial only if it can be turned into information systems that will meet the organizations operating requirements. Simply stated, this test of feasibility asks if the system will work when it is developed and installed. Are there major barriers to Implementation? Here are questions that will help test the operational feasibility of a project:
Is there sufficient support for the project from management from users? If the current system is well liked and used to the extent that persons will not be able to see reasons for change, there may be resistance.
Are the current business methods acceptable to the user? If they are not, Users may welcome a change that will bring about a more operational and useful systems.
Have the user been involved in the planning and development of the project?
Early involvement reduces the chances of resistance to the system and in general and increases the likelihood of successful project.
Since the proposed system was to help reduce the hardships encountered. In the existing manual system, the new system was considered to be operational feasible.

4. Technical feasibility:

Evaluating the technical feasibility is the trickiest part of a feasibility study. This is because, .at this point in time, not too many detailed design of the system, making it difficult to access issues like performance, costs on (on account of the kind of technology to be deployed) etc. A number of issues have to be considered while doing a technical analysis.

F. Software Requirement Specification:

Purpose:
The purpose of Bug Tracking for improving software reliability is to provide better service to the administrator or useful for applications developed in an organization.

G. Project Scope and Project Features

Bug tracking will report and track the progress of bugs from discovery through to resolution, where a bug is defined as a deviation from requirements. Bug tracking systems are most commonly used in the
Coding and testing phases of the software development process.

An android application is built to allow managers to keep track of bugs spent by employees, assign members to projects and remotely control the system.
The Bug Tracking improves Software Reliability and it is a web based application that can be accessed throughout the organization. This system can be used for logging bugs against an application/module, assigning bugs to team members and tracking the bugs to resolution.
Features like email notifications, user maintenance, user access control, report generators etc can be added in this system.
Bug Tracking System provides:

1. Instant access.
2. Improved productivity.
3. Optimum utilization of resources.
4. Efficient management of records.
5. Simplification of the operations.
6. Less processing time and getting required information.

7. User friendly.
8. Portable and flexible for further enhancement

H. overall Description

Defect Tracking System is a web-based application designed to help a workgroup keep track of Defects and tasks via a shared central resource. The system was designed specifically with the IT department in mind, where quick access to shared data and history is a requirement, both from an internal organizational perspective, as well as to fulfill the needs of the customers.
It provides one roof solution for all the Defects issues in the software development. It doesn't provide any kind of solution to any kind of problem. It only acts as a means to transmit the issues and their details to the concerned office personnel with accuracy. It is a tool that helps in providing the solution for the Employee request Log in right time.
In addition to all these, it also maintains the preferences, customized settings, priorities, users, etc. It is very critical to solve different kind of reports at a time in the existing system. The IT departments have different Operational Administrators who were providing so many problems in each and every day.

I. User classes and characteristics

Admin: This module has the entire access to all other modules, admin creates the project and assigning the projects to the created manager, adding members to the managers, assigning bugs based on the priority. Can update the manager, members and access to the particular project data. Generating reports based on the managers report submission.

Manager**:** Manager has the full access to the particular project assigned by the admin and controls the team member's access to the bugs assigned. Has the permission to generate the reports and update the information of team members and adding members to the project.

Developer: Can access the task or bug assigned by the manager, view assigned projects and resolving the assigned bug. Developer can view the bugs list assigned by the manager.

Tester: Tester can access to the projects or bugs assigned by the manager, can view the assigned projects and can add a new bug to the list and send the bug back to the manager. Tester can login to the system and

Reports**:** Both Admin and Manager can access this module and generate the reports based on the requirements

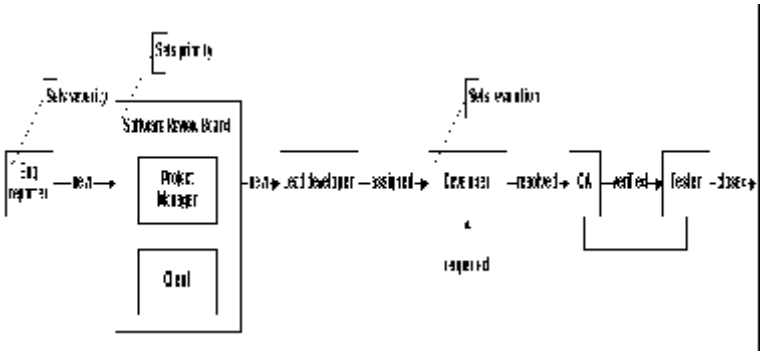

Fig 1.BTS Workflow

J. Design and Implementation Constraints

CO-1: Only the permanent employees can access the system.
CO-2: Advanced techniques are not used to check the authorization.
CO-3: Once the employee is registered to a course cannot drop, without completing**.**

K. User Documentation
UD-1: The system shall provide an online hierarchical and cross-linked help system in Bug Tracking
System that describes and illustrates all system functions.

UD-2: The first time a new user accesses the system and on user demand thereafter, the system shall provide an online tutorial to allow users to practice tracking bugs

L. Assumptions and Dependencies

AS-1: User sends defect report. This report contains complete defect description, type of defect and priority details.
AS-2: Employee checks the defect status which can be posed by earlier. DE-1: The Bug report depends on the bug status being completed or not

M. System Features

Description and Priority*:*
The tasks in our Bug Tracking Software can be displayed in two main views.
My Tasks displays the tasks assigned to you, and Assigned Tasks displays the tasks you have created or those in which you are a stakeholder.
Priority: Medium

Email Alerts:
Description and Priority:

Email alerts are sent when new tasks are created or existing tasks are modified. Related users and stakeholders are notified

and Managers are notified only of new tasks and changes to status or urgency.
Priority:

N. System Design

The modules involved are:
Administrator
Defect
Tracking Search
Reports
Registration and Authentication

a) Administrator**:** This module has the entire access to all other modules, admin creates the project and assigning the projects to the created manager, adding members to the managers, assigning bugs based on the priority. Can update the manager, members and access to the particular project data. Generating reports based on the managers report submission.
Administrator can perform these following tasks:-
2. User Maintenance**:** Users of this system treated as employees. Employees can be recruited by the administrator. Administrator is only authenticated to assign roles to employees
3. Component Maintenance: Creating a component (application being developed/enhanced), Granting & Revoking access on components to Users and Marking a component as "Active" or "Closed".
4. Defect tracking: Creating, Assigning defects to users, Modifying and Closing a defect. A defect screen should at least have following details and this defect report can be verified by concerned admin. After verify he can send the status to the employees.
5. Defect Id and Title
6. Defect priority
7. Date created Date and Time
8. Defect description
9. Operator Details
10. Operational Administrator
11. Status

b) Manager**:** Manager has the full access to the particular project assigned by the admin and controls the team member's access to the bugs assigned. Has the permission to generate the reports and update the information of team members and adding members to the project.

c) Developer**:** Can access the task or bug assigned by the manager, view assigned projects and resolving the assigned bug. Developer can view the bugs list assigned by the manager.

d) Tester**:** Tester can access to the projects or bugs assigned by the manager, can view the assigned projects and can add a new bug to the list and send the bug back to the manager. Tester can login to the system and access the assigned projects list.

e) Reports**:** Both Admin and Manager can access this module and generate the reports based on the requirements.

f) Search: Search can be provided by every user of this application. Administrator can search what types of component are used in this organization. Employees can search their own profiles.

g) Registration and Authentication: Every user must be a registered person. This registration can be approved by the administrator. After successful completion of registration process a user can able to log in into the system. The user credentials can be validated in this authentication module.
Password management like forgot password and remember password features can be added in authentication modules.

Following additional tasks also can be performed by this application:

1. Find User
2. Find component
3. Find defect
4. Send Defect Report
5. Check Defect Status

Find User**:** A search screen to find users and display results.
Find component: A search screen to find components and display results.
Find defect: A search screen to find defects and display results.

O. Inputs and Outputs

The main inputs, outputs and major functions of the system are as follows.
Inputs:
1. While sending defect report employee can choose target email id for operational administrator.
2. Employees, administrators can enter their user id and password for log in into the system.
3. User sends defect report. This report contains complete defect description, type of defect and priority details.
4. Employee checks the defect status which can be posed by earlier.
5. Administrator can generate various reports.
6. User requests the search.
7. Admin can edit the personal details and so on.
Outputs:

1. The defect report can be posted into the different administrators.
2. Employee login can be accepted, they can obtain their own home page.
3. Operational Administrator receives the defect report which is send by the operator.

4. Operational Administrator send acknowledgement to the employee which is posted by any defect.
5. Various kinds of reports are generated by the administrator.

a) Export to Excel.
b) Export to PDF.
c) Print the Report.
d) User search criteria can be processed and results are displayed in the user panel.

P. State Diagram

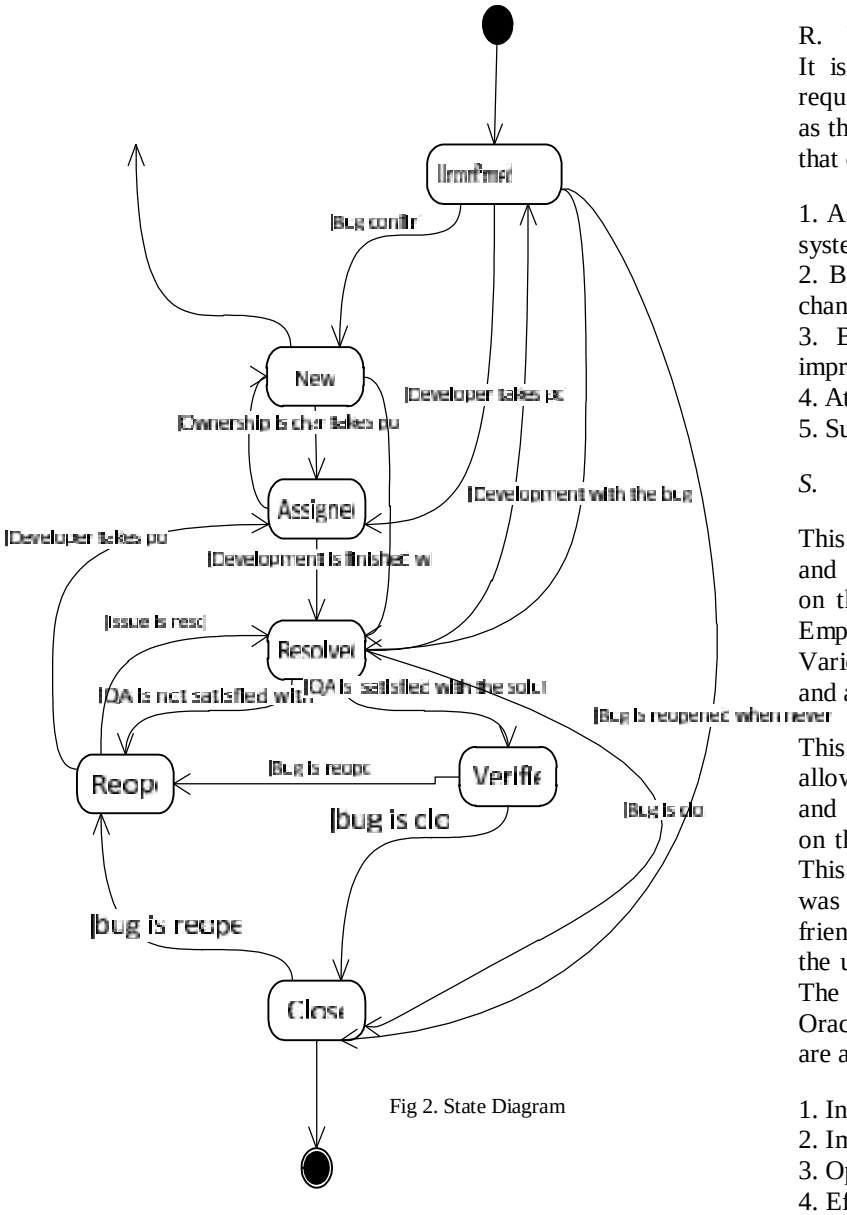

Fig 2. State Diagram

Q. Future Enchanement All these reports are send into different file

Limitations of the system:
1. Only the permanent employees can access the system.
2. Advanced techniques are not used to check the authorization.
3. Once the employee is registered to a course cannot drop, without completing.

R. Future Enhancements:
It is not possible to develop a system that makes all the requirements of the user. User requirements keep changing as the system is being used. Some of the future enhancements that can be done to this system are:

1. As the technology emerges, it is possible to upgrade the system and can be adaptable to desired environment.
2. Because it is based on object-oriented design, any further changes can be easily adaptable.
3. Based on the future security issues, security can be improved using emerging technologies.
4. Attendance module can be added
5. Sub admin module can be added

S. Project Summary

This project Bug Tracking for Improving Software Quality and Reliability is to keep track of employee skills and based on the skills assigning of the task is done to an employee. Employee does bugs capturing. It can be done on daily basis. Various Reports are generated by this System for an employee and as well as to a manager.

This project will be accessible to all developers and its facility allows developers to focus on creating the database schema and while letting the application server define table based on the fields in JSP and relationships between them.
This application software has been computed successfully and was also tested successfully by taking “test cases”. It is user friendly, and has required options, which can be utilized by the user to perform the desired operations.
The software is developed using Java as front end and Oracle as back end in Windows environment. The goals that are achieved by the software are:

1. Instant access.
2. Improved productivity.
3. Optimum utilization of resources.
4. Efficient management of records.
5. Simplification of the operations.
6. Less processing time and getting required information.
7. User friendly.
8. Portable and flexible for further enhancement.

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