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| Boston University |
| MET CS 633 – Term Project – Soft Bug Off |
| Vernon Giles III |

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| vgiles@bu.edu  10/17/2014 |

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# 1.0 Introduction

During the process of software development, bugs are invariably introduced to the code. In order to reduce the effect of these defects, teams use software to identify, report, and track the resolution of issues. Soft Bug Off is a system that is being developed to aid software developers in their pursuit of error free programs.

## 1.1 System Users

This system will be used by software development firms to track bugs that are found in their code. Within the teams that will use the system, there are a variety of users and tasks that will need to utilize it in different ways. The following are a list of the types of personas that will interact with the system.

|  |  |
| --- | --- |
| **Title** | **Description** |
| System Development Analyst (SD Analyst) | This persona can describe either the original creator of the code with the bug or the person responsible for fixing the issues identified in the system. |
| Quality Assurance Analyst (QA Analyst) | This person is responsible for tracking the problem from the time it is reported until the issue has been resolved. They are also responsible for performing or coordinating testing of proposed fixes to ensure they solve the issue. |
| Manager | Management of the Developer and QA Analyst is the responsibility of this person. They are also able to override the priority of any particular issue. |
| Submitter | This persona is given to anyone who submits any given bug or issue to be resolved. |
| System Administrator (Sys Admin) | This is a person who will use the software being developed by the firm. They define how the features of the software being developed work as well as verify they are working as defined. |

Table 1 - System Users

## 1.2 Roles

Of these users, they will interact with the system in different ways. For each task, the users will have different roles. The following grid shows the responsibility of each persona for the various tasks that need to be performed by the system.

|  |  | **ROLES** | | | | |
| --- | --- | --- | --- | --- | --- | --- |
|  | **TASK** | **SD Analyst** | **QA Analyst** | **Manager** | **Submitter** | **Sys Admin** |
|  | Submit Issue | R | R | R | R | R |
|  | Assign Priority | I | R | A | I | I |
|  | Assess Issue | C | R | I | C | I |
|  | Propose Solution | R | I | I | I | I |
|  | Test Solution | S | R | I | I | I |
|  | Verify Solution | I | S | I | R | I |
|  | Reassess Solution | C | R | I | I | I |
|  | Close Issue | C | R | I | I | I |
|  | Analyze Trends | S | S | R | I | I |
|  | Distribute Reports | I | I | R | I | I |
|  | Purge Old Records | I | I | A | I | R |

Table 2 - User Roles

|  |  |  |
| --- | --- | --- |
|  | **DEFINITION** | **RESPONSIBILITY** |
| **R** | Responsible | Owns task execution and outcome |
| **A** | Accountable | To whom "R" is accountable |
| **S** | Supporting | Supports the task completion |
| **C** | Consulted | Has expertise or capability to complete the task |
| **I** | Informed | Must be notified of the results, but need not be consulted |

Table 3 - R.A.S.C.I. Key

## 1.3 Scope & Limitations

In order to make sure the system meets certain minimums and is not built with bloat,

|  |  |  |
| --- | --- | --- |
|  | **Attribute of Defect Tracking System** | **Limitation** |
| 1 | Minimum number of issues supported | 5,000 |
| 2 | Minimum number of concurrent users supported | 5 |
| 3 | All concurrent users see updated issue information | Yes |
| 4 | Number of States (Statuses) | 5 |
| 5 | Response Time – Search Issue Titles | 3 seconds |
| 6 | Response Time – Submit Issue | 1 second |

Table 4 - Scope and Limitations

## 1.4 Requirements

| As a... I want to... so that to... | | | |
| --- | --- | --- | --- |
|  | Roles | Action | Value |
| 1 | Submitter | Submit an issue and explain the details of that issue | Alert the Quality Team that there is a possible issue with the software |
| 2 | QA Analyst | Analyze the issue to assess appropriate priority and assign a developer | The development team can know who should work on the issue and how to prioritize their work |
| 3 | QA Analyst | Record Initial Analysis of issue in the system | Provide the development team with details about the issue |
| 4 | Dev Analyst | Document the steps taken to develop a possible solution | Show the details of solution to be tested |
| 5 | QA Analyst | Test and verify Solution to the issue | Ensure the solution provided solves the cause of the issue |
| 6 | QA Analyst | Close solved issues | Remove issue from the current task list |
| 7 | Manager | Generate reports with information about issues based on search results | Allow for the analysis of trends and distribution of information about issues that are in need of being resolved |
| 8 | Sys Admin | Purge old records from the current database | Keep the database file from growing too large and slowing down the system |

Table 5 - Requirements

## 1.5 Configuration Items

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Configuration Item | Version | Date | Owner | Repository |
| 1 | System Users | 1.0 | 10/13/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/SystemUsers.xlsx> |
| 2 | User Roles | 1.0 | 10/13/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/UserRoles.xlsx> |
| 3 | Scope and limitation | 1.2 | 10/15/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/Scope_Limitations.xlsx> |
| 4 | Requirement list | 1.0 | 10/16/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/RequirementList.xlsx> |
| 5 | Estimation Record | 1.0 | 10/15/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/EstimationRecord.xlsx> |
| 6 | State transition diagram | 1.2 | 10/14/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/STDiagram.vsdx> |
| 7 | Definition of use cases | 1.0 | 10/17/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/UseCases.xlsx> |
| 8 | Definition of fields | 1.0 | 10/9/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/Definition%20of%20Fields.xlsx> |
| 9 | Definition of Reports | 0.1 | 10/9/2014 | Vernon G. | This Document |
| 10 | Test Cases | 0.1 | 10/9/2014 | Vernon G. | This Document |
| 11 | Defect Tracking System | 0.1 | 10/9/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/SoftBugOff.accdb> |
| 12 | Defects from Test Cases | 0.1 | 10/9/2014 | Vernon G. | This Document |
| 13 | Term Project Document | 0.6 | 10/16/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/Giles_Vernon_TermProject.docx> |
| 14 | Configuration Item List | 1.2 | 10/15/2014 | Vernon G. | <https://github.com/sungori/SoftBugOff/blob/master/ConfigurationItemList.xlsx> |

Table 6 - Configuration Items List

## 1.6 Estimation Record

| **PHASE** | **TASK** | **SIZE MEASURE** | **TYPICAL EFFORT PER SIZE MEASURE (PERSON / HOURS)** | **SIZE** | **EFFORT (PERSON / HOURS)** | **EFFORT (PERSON / HOURS)** | | **Final (Fibonacci)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  | **Expert A Expert B** | |  |
| **Requirements** | **Definition of Users and User Roles** | # roles | 0.20 | 5 | 1 | 1 | 1 | 1 |
| **Definition of Scope and Limitations** | # attributes | 0.15 | 6 | 0.9 | 1 | 0.75 | 1 |
| **System Requirements Specification** | # requirements | 0.50 | 8 | 4 | 4.5 | 4 | 5 |
| **Configuration Management** | **Configuration Items List** | # CI items | 0.15 | 13 | 1.95 | 2 | 1.5 | 2 |
| **Estimation** | **Estimation Record** | # tasks | 0.15 | 13 | 1.95 | 1.5 | 1.75 | 2 |
| **Design** | **State Transition Diagram** | # states | 0.25 | 4 | 1 | 1 | 1.25 | 2 |
| **Definition of Use Cases** | # use cases | 1.00 | 4 | 4 | 4 | 5 | 5 |
| **Definition of Fields** | # fields | 0.15 | 20 | 3 | 2.75 | 3.25 | 5 |
| **Definition of Reports** | # reports | 1.50 | 2 | 3 | 2.5 | 3 | 3 |
| **Peer Reviews** | **Issues from Peer Reviews** | # issues | 0.25 | 4 | 1 | 1 | 0.5 | 1 |
| **Implementation** | **Defect Tracking System** | # tables | 7.00 | 7 | 49 | 50 | 48 | 55 |
| **Test Design** | **Test Cases** | # test cases | 0.40 | 8 | 3.2 | 4 | 3.5 | 5 |
| **Test Execution** | **Record Defects Identified During Testing** | # defects | 0.30 | 8 | 2.4 | 2.5 | 3 | 3 |
| **TOTAL** | | | | | | | | 90 |

# 2 Design Documents

## 2.1 State Transition Diagram

 Figure 1 - State Transition Diagram

## 2.2 Use Cases

|  |  |
| --- | --- |
| Use Case Name: | Enter New Issue |
| Number: | 1.0.0 |
| Version: | 1.0 |
| Date Created: | 10/12/2014 |
| Date Last Updated: | 10/16/2014 |
| Initial Event: | Submitter enters system with the intent of reporting an issue |
| Primary Actor(s): | Submitter |
| Secondary Actors(s): |  |
| Brief Description: | The Submitter enters a new issue into the system |
|  |  |
| Normal Flow of Events: | The Submitter clicks on a new issue button then fill in as much information on the form as possible |
| Pre-Conditions: | The Submitter needs to have all of the required information before attempting to enter the issue into the system |
| Post-Conditions: | Clicking the Submit button on the new issue form takes the user to the issue details screen |
| Assumptions/Issues/Questions/Notes: | It is assumed the system feature that requires a field to be entered to save a record will work properly |

|  |  |
| --- | --- |
| Use Case Name: | Update Issue with solution information |
| Number: | 2.0.0 |
| Version: | 1.0 |
| Date Created: | 10/16/2014 |
| Date Last Updated: | 10/16/2014 |
| Initial Event: | Analyst opens the issue to enter new or edit existing solution intormation |
| Primary Actor(s): | QA Analyst; Dev Analyst |
| Secondary Actors(s): | Manager |
| Brief Description: | The issue must be updated periodically by QA and Development in the process of finding a solution |
|  |  |
| Normal Flow of Events: | Analyst opens the issue that needs to be updated or edited and enters all information into the appropriate fields. |
| Pre-Conditions: | The Analyst needs to know the issue number to be able to locate the exact issue they are working on. |
| Post-Conditions: | Pushing the close button takes the user back to the main screen. |
| Assumptions/Issues/Questions/Notes: | Analysis and development are done in separate systems. This is just for tracking the results of analysis and development |

|  |  |
| --- | --- |
| Use Case Name: | Update Issue with Testing information |
| Number: | 3.0.0 |
| Version: | 1.0 |
| Date Created: | 10/16/2014 |
| Date Last Updated: | 10/17/2014 |
| Initial Event: | QA Analyst opens issue to enter testing details |
| Primary Actor(s): | QA Analyst |
| Secondary Actors(s): | Submitter |
| Brief Description: | The QA Analyst must be able to use the system to make edits to the testing information in the system |
|  |  |
| Normal Flow of Events: | QA Analyst opens issue to enter testing results into the system. Once the all test have been passed, the analyst can click the checkbox |
| Pre-Conditions: | Developers have proposed a solution to the issue. |
| Post-Conditions: | Test has been verified as successful and the issues has been marked accordingly. |
| Assumptions/Issues/Questions/Notes: | Test are maintained, administered and run through external systems. |

|  |  |
| --- | --- |
| Use Case Name: | Print Reports |
| Number: | 4.0.0 |
| Version: | 1 |
| Date Created: | 10/15/2014 |
| Date Last Updated: | 10/16/2014 |
| Initial Event: | One of the report functions are clicked from the main menu |
| Primary Actor(s): | Managers |
| Secondary Actors(s): | QA Analysts |
| Brief Description: | Reports about open issues and individual reports about issues need to be printed out of the system. |
|  |  |
| Normal Flow of Events: | Manager logs into the system to generate report. They choose between report of all issues or report for individual issue |
| Pre-Conditions: | For individual report, the Manager must have the issue number |
| Post-Conditions: | The report is displayed on the screen and the manager has the option to print it out |
| Assumptions/Issues/Questions/Notes: | The MS Access database software can print generated reports |

|  |  |
| --- | --- |
| Use Case Name: | Close Issue |
| Number: | 5.0.0 |
| Version: | 1.0 |
| Date Created: | 10/17/2014 |
| Date Last Updated: | 10/17/2014 |
| Initial Event: | The QA Analyst goes into the system to close an issue because it has been resolved |
| Primary Actor(s): | QA Analyst |
| Secondary Actors(s): | Submitter, Manager |
| Brief Description: | The issue gets marked as closed after development and testing have been verified |
|  |  |
| Normal Flow of Events: | After the solution to the issue has been tested and verified the QA Analyst will add any additional comments to the descriptions and mark the case as closed |
| Pre-Conditions: | Test has been perfromed and the solution has been verified to solve the issue |
| Post-Conditions: | The issue has been closed |
| Assumptions/Issues/Questions/Notes: |  |

|  |  |
| --- | --- |
| Use Case Name: | ReOpen Issue |
| Number: | 6.0.0 |
| Version: | 1.0 |
| Date Created: | 10/17/2014 |
| Date Last Updated: | 10/17/2014 |
| Initial Event: | Issue is resubmitted after it is closed because the original issue |
| Primary Actor(s): | QA Analyst |
| Secondary Actors(s): | Submitter, |
| Brief Description: | An issue that was originally entered into the system has been identified as still being an issue |
|  |  |
| Normal Flow of Events: | The analyst opens the issueand edits the status changing it to reioened |
| Pre-Conditions: | Issue has been previously closed but it has been realized that the issue still remained |
| Post-Conditions: |  |
| Assumptions/Issues/Questions/Notes: |  |

## 2.3 Field Definitions

|  | **Field Name** | **Required** | **Data Type** | **Size** | **Default** | **Valid Values** |
| --- | --- | --- | --- | --- | --- | --- |
| 1 | IssueNumber | Yes | AutoNumber | Five digit | Auto Number |  |
| 2 | ShortDescription | Yes | Text | 50 Char |  |  |
| 3 | DetailDescription | No | Test | 500 Char |  |  |
| 4 | Status | Yes | Drop Down |  | Received | Received, Assigned, Solved, Reopened, Tested, Closed |
| 5 | SubmissionDate | Yes | Date | 10 Char |  | MM/DD/YYYY |
| 6 | SubmitterFirstName | Yes | Text |  |  |  |
| 7 | Submitter Last Name | Yes | Text |  |  |  |
| 8 | SubmitterDepartment | Yes | Drop Down |  |  | Quality, Finance,  Development, Tech Support, Marketing, Human Resources |
| 9 | AssignedTo | No | Text |  |  |  |
| 10 | Priority | No | Drop Down | 1 Char | 5 | 1, 2, 3, 4, 5 |
| 11 | SolutionNotes | No | Text |  |  |  |
| 12 | TestCaseNumber | No | Number | 4 Char |  |  |
| 13 | TestNotes | No | Text |  |  |  |
| 14 | PassedTest | No | Yes/No |  |  |  |
| 15 | Date Closed | No | Date | 10 Char |  | MM/DD/YYYY |
| 16 | TimesReOpened | No | Number | 2 Char |  |  |
| 17 | ReOpenedReason | No | Memo |  |  |  |
| 18 | ReOpenedSolution | No | Memo |  |  |  |
| 19 | ReOpenedTestCase | No | Number |  |  |  |
| 20 | ReOpenedTestResults | No | Memo |  |  |  |
| 21 | ReClosedDate | No | Date |  |  |  |

Table 7 - Field Definitions

## 2.4 Report Definitions

# 3.0 Implementation

# 4.0 Testing

# References