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## American International University- Bangladesh (AIUB)

## Department of Computer Science

## Software Quality and Testing

## Summer 2019-2020

## Project: Developing A Test Plan For System Administration Of ABC University

**Subject: Software Quality & Testing**

**Section: B**

**Department: Computer Science**

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1. **Introduction:**

This is an introduction of the test plan for the Registration Module of ABC University. So According to the requirements and functionality each and every test is designed in a specific way to meet the client’s requirements. We have correctly executed every test. The goal of this test plan is to make sure that the version of software works correctly and everything should be according to the client’s need and should have each and every one of the requirements and features are tested. So there is almost no chance for the software to crash or finding any bug that might hamper the system. Almost all the possible or known bugs are removed but some bugs may still exist which may be unknown to the developers or may be known but the chance of that bug to occur is very low. So we have build the best quality product within time and money.

1. **Test Items:**

Everything about the systems and subsystems needed to be tested. Those things are included in this section. All these can be listed by both priority and two different categories. They are

We have separated our test items in two general categories. Such as-

* Software Components.
* Hardware Components.

As we are considering this as a comparably higher level document, it focused on the functional areas of the system. Detailed test items are described below-

1. **Software Components:**
   * User interactions through the GUI (Graphical User Interface) including touchscreen and keyboard inputs.
   * Access modifier for different users; such as control of modification and configuration when used as admin.
   * Functional display for following events:
     + See and interact with the list of course; including list of course time and day.
     + See and interact with the list of real time course availability and information; including how many section of a particular course is available and how many seats are available (shown on the display) .
   * Select and validate each of the options from the display functionalities.
   * Course Selecting option with the following functionalities and criteria’s:
     + A student can select multiple courses in one transaction.
     + Restriction and limitation on how many course a student can take in the following semester.
   * Course cancellation functionality with defined rules:
     + Student can unselect the courses they have taken.
     + Admin can modify all the selected things.
   * Generate receipt of total semester fee.
   * All the read only information can be displayed in the website. Though transaction will not be possible.
   * Compatible methods and functionalities for insert, update, delete and save logged information in the designated Oracle database system.
2. **Hardware Components:**
   * Display monitor with touch screen capability.
   * Keyboard for insert input strings and interact with the system.
   * The physical server for Oracle database.

**03.Features to be tested**

1.Interface with display monitor.

2.Keyboard interaction along with the display screen.

3. User interactions through the GUI (Graphical User Interface) including touchscreen and keyboard inputs

4.All the course schedule display on the bases of their accurate time.

5. Menu in the university management software that all things is working correctly.

6.In registration module all the available course show correctly on the bases of their perquisite.

7.Grade report on the courses is submitted by the instructor correctly or not.

8.All the useful model in the academic curriculam is seen on the system or not.

9. Inspection of student database and employee database. Insert, update, delete and save logged information in the designated Oracle database system is working correctly or not.

10.Secured validation process for semester payment,employee salary.

11. In library module a testers checks when issuing a book it is updated the system or not and all validation is working correctly in the system and returing book functionality is working correctly or not.

12. Secured validation process for maintain the system.

13. Select and validate each of the option of registration module.

14. Notification bar is working correctly.

15.System is accessible for all its users.

**4.0** **Strategies for White Box Testing**:

**4.1 UNIT TESTING**:

The Unit Testing is a test that tests each single module of the software to check for errors. This is mainly done to discover errors in the code of the Administration System. The main goal of the unit testing would be to isolate each part of the program and to check the correctness of the code. In the case of the Administration System, all the web forms and the object oriented classes will be tested. There are many benefits for this unit testing:

* The unit testing facilitates change in the code.
* It allows testing to be done in a bottom up fashion.

It allows testing to be done in a bottom up fashion.

At the same time, unit testing has some disadvantages such as, it might not identify each

and every error in the system.

**4.2 INTEGRATION TESTING:**

In Integration Testing, the individual software modules are combined and tested as a whole unit. The integration testing generally follows unit testing where each module is tested as a separate unit. The main purpose of the integration testing is to test the

functional and performance requirements on the major items of the project.

All the modules of the project developed individually would be combined together and

tested as a whole system in the integration testing.

**4.3 REGRESSION TESTING:**

The Regression Testing is generally done whenever modifications are made to the source code of a project. The Regression Testing can also be defined as the process of testing changes made to the computer program and also makes sure that the older programming still works with the new changes.

So, before any new version of a software product is released, the old test cases for the

project will be run against the software with the changes made, to make sure that the old

functionalities of the project still work.

**5.0 Strategies for Black Box Testing:**

**5.1 SYSTEM TESTING:**

The system testing is mainly done on the whole integrated system to make sure that the project that has been developed meets all the requirements. The test cases for the system testing will be the combination of unit and integration tests.

**5.2 ACCEPTANCE TESTING:**

This testing is generally performed when the project is nearing its end. This test mainly qualifies the project and decides if it will be accepted by the users of the system. The users or the customers of the project are responsible for the test.

6.0 Possible Risks:

The registration system might crash when there is a lot of traffic on it at a certain time like for students doing pre-registration to mitigate this a backup server should be kept for times like this. Due to political unrest there might be delays in delivery time of the software. Someone might find the server busy than intended, though the chances of it happening is very low. If the internet speed becomes slow due to any reason the information coming to the monitor might become slow and will increased traffic of people browsing so, a backup ISP is required for that particular condition.

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| **Risks** | **Approach** |
| Requirements Inflation | Purchase requirements . |
| Personnel shortfalls | Staffing with top talent;Job matching;Teambuilding;Training and career development;Early scheduling of key personnel |
| Developing the wrong software functions | Improved software evaluation;Formal specification methods;User surveys;Prototyping;Early user manuals |
| Unrealistic time and cost estimates | Multiple estimation techniques;Design to cost;Incremental development;Recording and analysis of past projects;Standardization of methods |
| Employee Turnover | Increased collaboration and information sharing on the team. |

7.0 Team Organization and distribution of works

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| Name | Distribution Of Works |
| Mito,Ali Hasan | Possible Risks, Conclusion,Schedule |
| MD Mostafa Jamil | Strategies for White Box Testing (Unit Testing include code review, Integration testing, regression testing ),  Strategies for Black Box Testing (System Testing and Acceptance Testing) |
| Kamrul Hassan | Introduction  Test Items |
| Shaikh Shakib Rahman | Features to be tested |

8.0 Schedule:

The section contains the overall project schedule. It discusses the phases and key milestones as they relate to quality assurance. It discusses the testing goals and standards that we’d like to achieve for each phase of testing that will be deployed, e.g., Usability Testing, Code Complete Acceptance, Beta Testing, Integration Testing, Regression Testing, and System Testing.The key dates for overall Automation ticketing application development and Testing are outlined below.

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| **Milestones** | **End Date** | **Notes** | **QA Deliverables/Roles** |
| Planning  Phase | 10/8/2020 | At this Milestone,the high level planning should be completed. Some of the deliverables are: Project Plan, Program function specifications. | High-level test planning activities, which include preliminary development of Master QA Plan (this document, QA schedule). |
| Code  Complete  -  Infrastructure | 15/8/2020 | This milestone is when all infrastructure development and functions should be  complete. The testing team should have performed unit & integration testing before checking the code into any build. | The Test Engineers should have completed or in the final stages of their preliminary Infrastructure Test Plan, test cases and other QA documents related to test execution for each feature or component such as test scenarios, expected results, data sets, test procedures, scripts and applicable testing tools. |
| Code  Complete  -Function | 20/8/2020 | This milestone includes unit testing and code review of each function component prior to checking the codeinto the test phase. The deliverables include systemtesting specification, Unit  testing specifications,  Integration plan. | The Test Engineers should have provided Code Complete  Assessment Test to Development  Engineer one week prior to Code Complete Review date. The Test  Engineers should also have completed or in the final stages of their preliminary White Box Test Plan, test cases and other QA documents related to test execution for each feature or  component such as test  scenarios, expected results, data sets, test procedures, scripts and  applicable testing tools. |
| Feature  Complete | 01/9/2020 | This phase allows for  feature clean up to verify remaining bug fixes and regression testing around the bug fixes. This milestone indicates that the feature is ready for Beta regression. | bugs verified and QA  documentation is finalized. The test Engineers should assess that Automation ticketing application features are ready for Beta regression and have started their preliminary Test Summary Reports. |
| Regression  Test | 9/9/2020 | This milestone represents that all Automation ticketing  application code and GUI interface to the Automation ticketing application is ready  for Regression Testing. | Complete regression test  execution of complete system and update Test Summary Reports for  regression. |
| Ship/Live | 12/9/2020 | Product is out. | Any unfinished Testing documents  should be complete. |

9.0 Conclusion:

A Test Plan Document mentions in detail the objective of testing along with other core information like the internal beta team, target market, hardware and resource requirements etc. In all this important document sets up guidelines that have to be followed during the complete testing phase.Software testing is an important part of the  development process. It is not a single activity that takes place after code implementation, but is part of each stage of the lifecycle. A successful  strategy will begin with consideration during requirements specification.