AMERICAN INTERNATIONAL UNIVERSITY-BANGLADESH

Faculty of Science and Information Technology

PROJECT SUBMISSION

Assign./Case Title:	**Developing a Test Plan for Student Registration System of AIUB**			
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Course Title:	SOFTWARE QUALITY AND TESTING			
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Semester:	Spring	2018-19	Degree Program:	BSc [SE]
Course Teacher:	LECTURER FARZANA BENTE ALAM			

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SOFTWARE QUALITY & TESTING PROJECT || SPRING 2018-19

1. TEST PLAN IDENTIFIER

A **TEST PLAN** is a document describing software testing scope and activities. It is the basis for formally testing any software/product in a project.

- **test plan**: A document describing the scope, approach, resources and schedule of intended test activities. It identifies amongst others test items, the features to be tested, the testing tasks, who will do each task, degree of tester independence, the test environment, the test design techniques and entry and exit criteria to be used, and the rationale for their choice, and any risks requiring contingency planning. It is a record of the test planning process.
- **master test plan**: A test plan that typically addresses multiple test levels.
- **phase test plan**: A test plan that typically addresses one test phase.

Test Plan Types

One can have the following types of test plans:

- **Master Test Plan:** A single high-level test plan for a project/product that unifies all other test plans.
- **Testing Level Specific Test Plans:** Plans for each level of testing.
    1. Unit Test Plan
    2. Integration Test Plan
    3. System Test Plan
    4. Acceptance Test Plan
- **Testing Type Specific Test Plans:** Plans for major types of testing like Performance Test Plan and Security Test Plan.

2. REFERENCES

Reference will be Functional requirement and business rule. We use some points from Google.

- www.google.com
- https://www.researchgate.net/publication/230636169_Software_Quality_Assurance

3. INTRODUCTION

Students online admission are a vital part of any University's running because students are what keep a University alive. The student's admission is one of the most important activities within a university as one cannot survive without students. A poor admission system can mean fever students being admitted into a university because of mistakes or an overly slow response time.

Online students' registration is the software which is helpful for students as well as the department in this project. The students are fascinated by the online system for registering students, add subject and fee structure. Our student management system deals with the various activities related to the students. In the software, we can register as a user and user has of two types students and administrator. Administrator has the power to add new user and delete a user

Through this online system we overcome many problems.

- Time and money are saved
- Nothing is done manually
- Long lines in the department for these issues

System may be defined as a layered structure that depicts how programs involved would interrelate and communicate. The term system may be used differently in different contexts, but more or less the concept remains the same.

The test plans are like other software documentation. They are dynamic in nature and must be kept up to date. The test plan will be documented is a

structural way using step by step technique. The test plan described below in an informal way using sequential structure.

Basically, systems are implemented for facilitating complex manual processes and that is exactly what we are trying to achieve. System is implemented as per user requirement such as a manufacturing concern may install a plant for easing out manual processes.

4. TEST ITEMS

1. LOGIN	2. ID	3. PASSWORD
4. STUDENTS INFORMATION	5. STUDENTS NAME	6. FACULTY NAME
7. DROPPING COURSE OPTION	8. SHOW SELECTION	9. DATA AND DATABASE INTEGRITY TESTING
10. SYSTEM TESTING	11. USER INTERFACE TESTING	12. PERFORMANCE TESTING
13. LOAD TESTING	14. STRESS TESTING	15. VOLUME TESTING
16. SECURITY AND ACCESS CONTROL TESTING	17. CONFIGURATION TESTING	18. FAIL OVER/RECOVERY TESTING
19. INSTALLATION TESTING	20. GO TO REGISTRATION	21. COURSE AND RESULT
22. GRADE REPORT	23. LOG OUT TESTING	

5. SOFTWARE RISK ISSUES

In this session we have to find what types of software is to be tested and what are the critical areas, such as:

1. Delivering of a third-party product.
2. New version of online course registration system interfacing software.
3. Students have the ability to use and understand this system the user interface should be understand.
4. Extremely complex functionalities that are embedded in online course registration system.
5. Modifications to components with a past history of failure.
6. The documented modules or change requests at any time systems fixed.

There are some inherent software risks such as complexity; these need to be identified.

1. Safety: The online course registration system for students is safety whenever he/she log in for.
2. Multiple interface: This type of interfaces user's(students/faculties) easy to understand.
3. Government regulations and rules: this type of risk happens when don't follow the regulations and rules.

Another key area of risk is a misunderstanding of the original requirements. Be aware of unclear requirements and requirements that cannot be tested.

6. FEATURES TO BE TESTED

Functions or features that I have planned to test:

Requirements of the online course registration systems:

- In this requirement each student cannot register for two courses which is occur at the same time.
- Each student can do register for courses which are offered in the specific semester, he/she must fill this requirement.

- In this requirement If any section has reached to a maximum number of students, student cannot register that section.
- In each section should be deactivated at the end of any semester in order to prevent the students from registering.
- Each student cannot register for two sections in a day/time which is belong to the same courses.
- Each student should be awarded a grade at the end of every semester for all the sections he/she has registered.
- To do this online registration for courses each student needs to have valid ID number.

For student's online course registration system those functionalities must be follow in this system's:

- 24/7 service.
- Student able to login to their portal at any time.
- Student able to edit their profile (Name and ID are not editable).
- Student able to see the previous semester courses, results and Faculties information.
- Student able to Register courses for the upcoming Semester if he/she meet the pre-requisites.
- Student can select the Academic year and the Semester to register.
- Student able to add courses to registration if he/she meet the requirements.
- Student able to choose preferable section for a course, only for who belong to that departments.
- Student can remove a course after he/she has added this to system.
- Student can view all the courses and course schedule he/she has added for the upcoming semester
- Advisor can permit a student to add/remove a course if the student has any constraints
- Administrator can login to system and add a new course, delete an existing course or edit a course description for the selected semester
- Administrator can open a new section or close a section for a course
- Administrator can make a course list, edit a course list, adjust number of credits per course list
- A user can change password

- The system shall display the schedule for any student (provided the semester details)
- The system shall display all the details for a section (Professor Name, Course Title, Suggested text-books, reference text-books, Room Number, Class schedule etc.)
- The system shall allow the users to identify the number of students in each section of a course.

7. FEATURES NOT TO BE TESTED

- It is possible that there could be few requirements that will be under scope but could not be tested because of lack of information provided.
- Students able to edit their profile
- In each section should be deactivated at the end of any semester in order to prevent the students from registering.
- In each end of the semester section should be auto deactivated because of every course have multiple sections offered in different semesters (Fall, Summer, Spring) in any particular year.
- There is no need to test this feature.

8. APPROACHES

We follow agile methodology in this project.

- **UNIT TESTING** a level of software testing where individual units/ components of a software are tested. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software. It is completed by a developer.

- **SYSTEM TESTING** is a level of software testing where a complete and integrated software is tested. System testing are usually "black box" testing. All the modules/components are integrated in order to verify if the system works as expected or not. System testing is done after integration testing. This is done by the Q/A.

  - In this testing we use some tools for performing the test items such as:
  - Selenium: selenium is a testing framework to perform web application testing across various browsers and platforms like Windows, Mac, and Linux.

- **ACCEPTANCE TESTING** is a level of software testing where a system is tested for acceptability. AT can be either alpha testing or beta testing. It is also called as application testing or end-user testing. The main purpose of the **user acceptance testing** is to verify end to end flow. ... UAT is performed after the system testing and major defect have been fixed.
  - Students & Administrator are the acceptance of our system.
  - We have to certify the system with respect to the requirements that was agreed upon. This testing happens in the final phase of testing.

9. ITEM PASS/FAIL CRITERIA

This testing will be completed when the key requirements will be successfully executable in the system such as 24/7 performance of the system, students will be able to log in with an id number and password and edit their profile in the system, they will be able to see previous semester courses, results and faculties. In addition, the academic calendar and registration years will be shown to the students. The students will also be able to do the upcoming registration and during registration all the sections will be shown to the student and there will be an option to select the preferable sections and they will be able to add or delete a course. Except the students the advisor will also be able to add or remove a course during registration.

In this scenario the students are able see the academic calendar but the reference book is not showing. The registration process is also running successfully as students can choose their course and sections and also can remove a section. The advisors are also able to do the students' registration. The system is ready to give 24/7 performance with all these requirements. The students can log in with valid id and password at any given time.

10. SUSPENSION CRITERIA AND RESUMPTION REQUIREMENTS

With each update from the vendor, a smoke test will be performed, if this test does not pass, further testing is halted until a version is delivered that will pass that test. Testing will resume when an update that can pass the smoke test has been delivered.

11. TEST DELIVERABLES

11.1 System/Integration test plan:

In System test the whole system has been tested. Hybrid approach has been used. At an initial point some issues with course title issues have been found. The course Title are shown in short forms and the referenced books are not showing with full title.

	Defect types and description	Category of defect
1	Course title incomplete	Low
2	Referenced book are not showing with full title	Low

11.2 Unit Test Plan:

Unit test plan has done in each iteration. Developers have done that mostly. Some functional defects were found their such as in

Phase 1: Users could log in with wrong password.

Phase 2: Course adding and removing functions were not working properly.

Phase 3: Students were not able to edit their profile.

	Defect type and description	Category of defect
1	Id log in function not working	Critical
2	Course adding dropping option	Critical
3	Profile edit options	Critical

11.3 Test Logs:

Test Name:	System Testing
Tester Name:	Sany, Mahnur Zerin
Project Id Name:	Online Registration software
Date tested:	21.02.2019

Test Case Id	Case Name	Condition	Expected result	Actual Result	Status
1.	Service hour	24/7	Valid	Valid	Successful
2	Id validation	First name, middle name	valid	valid	Successful
3	Password Validation	A4MMM	Valid	Accepted	Successful
4	Course adding checking	Course added	Valid	Accepted	Successful
5	Course removing checking	Course Removed	Valid	Accepted	Successful
6	Course title name checking	Title button shows the title	Valid	Accepted	Successful
7	Section select option checking	Sections can be selected	Valid	Accepted	Successful
8	Advisors log in checking	Can log in	Valid	Accepted	Successful
9	Profile editing checking	Editable by student	Valid	Accepted	Successful
10	Course title checking	Shows courses short name in the title	invalid	valid	failed
11	Reference book Title checking	Short title will be shown	Invalid	Valid	failed

12. TEST DELIVERABLES

Task	Assigned to	Status
Create acceptance Test plan	Team manager, CLIENTS (Students, Advisors)	Acceptance test environment has to be created.
Define Acceptance test rules	TM, PM	The process of executing acceptance test has to be declared.
Verify prototypes of reports	Dev, Client, TM	The prototypes have to be evaluated to estimate the test result.
Verify test logs	Dev, Client, TM	Test logs have to be verified by the reviewer

13. ENVIRONMENTAL NEEDS

Our project is the students' online registration system of American International University – Bangladesh. There are essentially two parts of our system with many of its functionalities. One part of the application is going to be accessed by the students, teachers, office staffs and another part is IT maintenance side (for admin/maintenance department). Following elements support the overall test strategy and effort to improve the quality of online registration system.

The following represents the essential hardware and software needs:

1. Any kind of Operating System that supports this website

2. Minimum Hardware (comparing with this era) configuration of pc's and servers

3. Reliable communication link with our website supported software

Description of actual testing environment:

1. Available client-side environment:
    a. No need to buy a new hardware because it runs with minimum hardware configuration
    b. Normal browsers are able to load this site
2. Available admin (server) side environment:
    a. Testing and development team do their job-related task for testing and QA on the total development point
    b. Unit, System, Acceptance, Load, Performance testing task.
3. Available testing tools:
    a. Use third party tool for further testing
    b. Selenium, Free Mind, VS-2012, Firewall etc.

14. STAFFING AND TRAINING NEEDS

In our project there is a testing team consisting of 04-06 members. It is an academic project (in student and faculty perspective) as well as a business project (in IT perspective). It seems like a bridge between academia and industry. The tester(s) and development engineers will ensure that teachers, students, staffs assign on this project are experienced with:

Development Period:

1. 1.General development and testing techniques and QA process.

2. Simple knowledge about website development lifecycle, Database Management.

3. Development tools, testing tools, that they may be required to use.

Production period:

1. Relevant people (internal users) should be trained by developer and tester.

2. Train at lease two persons who will maintain and solve general problems.

15. RESPONSIBILITIES

Overall Operations	Test Manager	Project Manager	Development Team	Testing Team	Client
Unit test documentation and execution	✓		✓	✓	
System/Integration test documentation and execution	✓	✓		✓	
Acceptance test documentation and execution			✓	✓	✓
System Design Review	✓	✓	✓		
Detail design review	✓	✓			
Test procedures and rules	✓	✓		✓	
Regression testing	✓		✓	✓	

16. SCHEDULE

Scheduling is an important part in project management. In a software project there are many different steps like requirement gathering, designing, developing, QA and testing. Every step has fixed timestamps. To develop a test plan, we need to consider these following parts:

1. Review of requirement documents
2. Create test design, observe test execution and produce the test incident/summary report
3. Development of Master Test Plan (MTP)
4. Develop the system/integration and acceptance test plans of this project
5. Review of the system design document
6. Unit test time within the development process
7. Allocate time for system/integration, acceptance

All steps must be accomplished within the fixed budget and time.

17. PLANNING RISKS AND CONTINGENCIES

Following are the likely project risks and possible contingencies of them:

RISKS	RISK DETAILS	POSSIBLE CONTINGENCIES
Unavailability of Website	Testing will be delayed until the website is established.	Possible Contingency can be increase testers or reduce numbers of test cases.
Unavailability of Testing Software	This can be caused because of the disability of the tools to handle cookie and it can lead to delay of automated testing and increase manual testing.	Possible Contingency can be increase testers or reduce numbers of test cases.
Time problem	There may not be enough time to complete all test cases.	In that case we can skip the cases with lower priorities.
Lack of Tester	If testers are unavailable or left the unfinished project, or die.	Test cases can be reduced by eliminating cases with low priority.
Large number of defects	A large number of defects make it functionally impossible to run all of the test cases.	In that case release of the version need to be delayed.

18. APPROVAL

The Names and Titles of all persons who must approve this plan.

Signature:	
Name:	
Role:	
Date:	

Signature:	
Name:	
Role:	
Date:	

Signature:	
Name:	
Role:	
Date:	

Signature:	
Name:	
Role:	
Date:	

19. GLOSSARY

TERMS	DEFINITION
Acceptance Testing	Acceptance Testing is a level of software testing where a system is tested for acceptability. The purpose of this test is to evaluate the system's compliance with the business requirements and assess whether it is acceptable for delivery
Automated Testing	Automated testing is the act of conducting specific tests via automation (e.g. a set of regression tests) as opposed to conducting them manually, while test automation refers to automating the process of tracking and managing the different tests
Functional Testing	Functional testing is a quality assurance process and a type of black-box testing that bases its test cases on the specifications of the software component under test.
Performance Testing	In software quality assurance, performance testing is in general, a testing practice performed to determine how a system performs in terms of responsiveness and stability under a particular workload.
Security Testing	Security testing is a process intended to reveal flaws in the security mechanisms of an information system that protect data and maintain functionality as intended.
Unit Testing	Testing of individual software components.
Test Plan	A test plan is a document describing software testing scope and activities. It is the basis for formally testing any software/product in a project.