IT314 Software Engineering Team 7

System Test Plan

[Keywords: Testing, Plan]

Version 1.0

20 February, 2013

Winter 2012-13
DA-IICT, Gandhinagar

Overview

The test plan is to refer to once the coding on small individual modules of the project is done, so that it is easy to integrate the system with least bugs later on. This is to assist in coordinating software and test versions within configuration management.

Target Audience

Mentors
Developers / Coders
Testing Team

Document Revision History

Version	Author(s)	Description	Reviewer(s)	Date
1.0	Sonu, Sumit, Surabhi	V1.0	Abhishek, Sandeep	20 February, 2013

Table of Contents

1. References

The following documents are needed to proceed with the development of an efficient test plan for the product:

- Project Plan v1.0 - To complete the product development in timely and cost effective manner
- Software Requirements Specification v1.0 - To clearly comprehend what features are needed by the client/user of the product
- IEEE 829 template

2. Introduction

2.1 Purpose

Testing is the process of analysing a software item to detect the differences between existing and required conditions and to evaluate the features of the software item. This Entelechy Website Test Plan document is designed to describe the scope, approach, resources and schedule of all testing activities. The plan identifies the items to be tested, the features to be tested and the type of testing to be performed. The main purpose is to ensure that all the modules are tested according to the specifications described in the SRS and that all the designed and developed modules are working properly.

The purpose of this Test Plan document is to:

- Specify the approach that will be used to test the product, and the deliverables.
- Break the product down into distinct areas and identify features of the product that are to be tested.
- Specify the procedures to be used for testing sign-off and product release.
- Indicate the tools used to test the product.
- List the resource and scheduling plans.
- Indicate the contact persons responsible for various areas of the project.
- Identify risks and contingency plans that may impact the testing of the product.
- Specify bug management procedures for the project.
- Specify criteria for acceptance of development drops to testing.

2.2 Overview of Entelechy Website

Entelechy is DA-IICT's campus magazine. It is published online by the student club – 'Press Club' since academic year 2004-05. The website – *entelechy.daiict.ac.in* is currently hosted on popular, open source publishing tool and content management system (CMS) – 'WordPress' (*wordpress.org*).

Our product - The new website for Entelechy, in addition to providing a new user interface design, will also ease the job of managing the website for the administrator and editors. The new website will also be more social and interactive.

2.3 Objectives of System Test

The primary objective of System Testing is to assure that the system meets the full requirements, including quality requirements (non-functional requirements). At the end of test phase, the software should fit the metrics for each quality requirement and should satisfy the use case scenarios and maintain the quality of the product. At the end of the project development cycle, the developer/owner of this online application should find that the project has met or exceeded all of their expectations as detailed in the system requirements specifications.

Another objective of System testing is to identify and expose all issues and associated risks, communicate all known issues to the project team, and ensure that all issues are addressed in an appropriate manner before release. Any changes, additions, or deletions to the requirements document, functional specification, or design specification will be documented and tested at the highest level of quality allowed, within the remaining time of the project and within the ability of the test team.

2.4 Formal Reviewing

There will be several formal review points before and during system test. This is a vital element in achieving a quality product.

2.4.1 Formal Review Points

- Design Documentation
- Testing Approach
- Unit Test Plans
- Unit Test Conditions & Results
- System Test Conditions
- System Test Progress
- Post System Test Review

3. Test Items

Within the scope of the project, we intend to test the following:

Entelechy Website – We need to check that the post, category and tag systems are working as intended. We also need to check that all the previously existing plug-ins and features are working correctly, in addition to the new ones.

4. Software Risk Issues

The various risks associated with the website include:

- System hang at server side
- System hang at client side
- Unwanted results on integrating modules
- Poorly documented modules and change requests
- Login error

5. Features to be tested

This is a listing of what is to be tested from the 'Users' viewpoint of what the system does.

This is not a technical description of the software, but a users view of the functions. As per the requirements captured by the SRS document the following modules would be tested in accordance with the test schedule.

- Login Module
- Like Button Module
- Sub-Category Generation Module
- View Profile Module
- Update Profile Module
- Upload Article Module
- Approve Article Module
- Comment System Module
- Recommendation System Module
- Search Module
- Notification System Module

6. Features Not to be Tested

There are various features that are already provided by Wordpress and we will not be testing them. These features include:

- Database Handling
- Security
- Platform Independency
- Multi-user Interface
- Web Browser’s ability to execute scripts like JavaScript, CSS, HTML.

7. Approach

We will be using the bottom up approach for testing our entire project.

We will start by unit testing in which every component's functioning will be tested (this can be done concurrently).

After checking all the components we will integrate all the components, as we progress in integration we will check on the basis of some assumed input. At each step of integration, modules will be tested.

Then we will proceed towards validation testing in which we will check whether all the requirements have been met or not.

After that we will perform a system testing and we will see how the whole system works together (this may include running the website on DA-IICT'S server for testing).

8. Test Strategy

8.1 Types of testing

8.1.1 Unit Testing

Component testing is done to verify the implementation of the component for the unit or module. The purpose of component testing is to ensure that the program logic is complete and correct. The modules identified in the System Requirements Specification document would be tested independently irrespective of the test results yielded for other modules. The purpose of component testing is to ensure that the program logic is complete and correct.

OBJECTIVE	The purpose of the unit testing is to assure that the program logic is correct and complete.
TECHNIQUE	Execute all Use Case and Use-Case flow, using valid and invalid data, to verify the following: The expected results occur when valid data is used in all test cases. The appropriate error or warning messages are displayed when invalid data is used.
COMPLETION CRITERIA	All test cases should be completed. All data should retain integrity.

8.1.2 Integration Testing

The purpose of integration testing is to confirm that the interfaces between module works correctly i.e. the modules work well when they are combined together to build up the system. Modules would be subject to testing after being integrated with other modules to make sure that integration has not affected the individual functionality of the module. Modules will be added one by one to the already tested modules and then tested again.

8.1.3 Validation Testing

Verification and validation testing are two important tests, which are carried out on software, before it has been handed over to the customer. The aim of both verification and validation is to ensure that the software product is made according to the requirements of the client and does indeed fulfil the intended purpose. So that the software product is tested thoroughly without any bias, often the job of validation testing may also be given to third party validation testing services. Therefore, validation testing is an important part of software quality assurance procedure.

8.1.4 System Level Testing

System Testing would be carried out to fully exercise the program as a whole to ensure that all elements of the integrated system function properly. The system testing involves:

OBJECTIVE	To confirm that the developed system meets the requirements as specified in SRS document. System Testing would be carried out to fully exercise the program as a whole to ensure that all elements of the integrated system function properly.
TECHNIQUE	The team members would go through the SRS to confirm that all the desired functionalities and the performance criteria captured in SRS are present.
COMPLETION CRITERIA	Integration tests should be complete before starting. All test cases should perform properly. All the functional requirements mentioned in the SRS are met.

8.1.5 Regression Testing

This is done to ensure that the applied changes to the application have not adversely affected previous tested functionality. This will be done by the team members during the integration phase of the project.

8.1.6 Performance Testing

Performance Testing is done to ensure that the application performs to customer expectations. Factors like response time to a particular action and number of simultaneous database accesses at a time are taken into consideration here. The team members along with the clients would test the system for performance by accessing the database concurrently and also check whether the response time for a particular action is not out of expected range.

8.1.7 Recovery Testing

Recovery testing will be done to test the system against crashes, system failure and other similar problems. Recovery will in this case be done with the help of the institute's system administrator as the entire database can be recovered through the administrator's help.

8.1.8 Stress Testing

Stress testing will be done to check the robustness and error handling of the system under heavy load. This would be done by opening several parallel connections to the system until the maximum server capacity is reached.

8.1.9 Acceptance Testing

OBJECTIVE	As the SRS acts as the contract of specifications for the project in consideration, the final software will be tested by the representatives from customer end who will test the software according to SRS and thus finally accept or reject it.
TECHNIQUE	The team members along with the clients would test the system for all the performance and functional requirements captured in the SRS. The testing at the last level will contain the smoke testing in which the tester selects random features from the project and tests them.
COMPLETION CRITERIA	All the requirements including the functional requirements and performance criteria are checked and acceptable to the client.

8.1.10 Configuration and Compatibility Testing

WordPress already addresses the issue of compatibility. No tests would be carried out to test this.

9. Item Pass/Fail Criteria

An item will pass or fail based on the testing phase result. The pass criterion is:

- The output of the feature is exactly the same as the expected output.
- Execution occurs with no errors.
- Updating and execution happens in an optimal amount of time, that is small for the user experience to go bad.

10. Test deliverables

The following are the test deliverables:

- Test Plan Document
- Test Cases
- Error logs and execution logs
- Problem reports and corrective actions

As we proceed with the coding phase of the project, using the bottom up approach, we will do parallel test checks as per the test plan document.

11. Software and hardware needs

11.1 Hardware

The minimum hardware requirements for the testing are:

- Computing device with internet/intranet access
- Server

Our product has a client-server application and the client side will have to be connected to the server side (DA-IICT's server) using Intranet (if on campus) or Internet (for outside access).

11.2 Software

Software	**For**
WordPress	To deploy the website
Xampp	Testing and Implementing

12. Responsibilities

Name	**Role**	**Responsibility**
Sonu	Test Lead	Testing Plan, Cases and Report
Surabhi	Tester	Testing Plan and Cases
Abhishek	Tester	Test Cases and Report
Prashant	Tester	Test Cases

13. Schedule

Following is the list of tests scheduled to be performed on the intended product per each increment as and when they are ready:

- Unit Testing: This will be done by all the coders on the specific unit that they develop and hence will be done simultaneously and independently after each unit is coded.
- Regression Testing: This will be performed for each module when setup and run as a combination of several units.
- Integration Testing: This will be performed over the entire system being run as a whole.

14. Planning Risks

The overall risks to the project are as under:

- Lack of personnel resources when testing is to begin.
- Late delivery of the software.
- Changes to the original requirements or designs.

Other possible risks can be

1) Team member/s not able to deliver on time due to unforeseen reasons, then following consequences may imply:

- Other members might have to deliver and work more to fill in for the non performing members.
- Team co-ordination can become imbalanced.
- Quality of the product can suffer, so can delivery in time.

2) Requirement definition will be complete by 18th February, 2013, but if the requirements change after that, any of the following may be the consequences:

- The scope of the plan may change.
- Cost of the project may change and hence cost reviewing and approving will be needed.
- The number of tests performed might be reduced or number of allowable defects might be increased.
- Test schedule and development schedule may be shifted accordingly.