MIST Smart Voting System (MSVS)

Software Testing Document

Group-02

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1 INTRODUCTION

The process or method of finding error/s in a software application or program so that the application functions according to the end user's requirement is called software testing.Software testing is the process of verifying a system with the purpose of identifying any errors, gaps or missing requirement versus the actual requirement. Software testing is broadly categorised into two types - functional testing and non-functional testing. Testing should be started as early as possible to reduce the cost and time to rework and produce software that is bug-free so that it can be delivered to the client. However, in Software Development Life Cycle (SDLC), testing can be started from the Requirements Gathering phase and continued till the software is out there in productions. It also depends on the development model that is being used. For example, in the Waterfall model, testing starts from the testing phase which is quite below in the tree,; but in the V-model, testing is performed parallel to the development phase.

1.1 Objectives

There are some objectives to be achieved for doing software testing of our project.

- Finding defects which may get created by the programmer while developing the software.
- Gaining confidence in and providing information about the level of quality.
- To prevent defects.
- To make sure that the end result meets the user requirements.
- To ensure that it satisfies the SRS that is System Requirement Specifications.
- To gain the confidence of the customers by providing them a quality product.

1.2 Scope

Software testing is a matured process of verification or validation of software against the features, requirements or specifications, which are both functional as well as non-functional. It involves creating test plans, test specifications, test code development, execution of tests and checking the documentation. Also, making sure that the product code changes doesn't cause the regressions, which means failure of earlier working features. Testing will be performed at several points in the life cycle as the product is constructed. Testing is a very 'dependent' activity. As a result, test planning is a continuing activity performed throughout the system development life cycle. Test plans must be developed for each level of product testing.

2 TEST ITEMS

We will mainly focus to ensure the following items to be tested.

- Requirements specification
- Design specification
- Availability
- Response time
- Security
- Capacity
- Usability
- Verification and Validation plans.

3 FEATURES TO BE TESTED

The features to be tested are listed below :

Authentication System

Criteria Assessment: Security
Testing Type: Unit Testing

Vote Event Creation

Criteria Assessment: Performance
Testing Type: Unit and Component Testing

Vote Result Publish

Criteria Assessment: Accuracy and Response
Testing Type: Unit Testing

Accessing Vote Event On Correct Date and Time

Criteria Assessment: Accuracy
Testing Type: Unit Testing

Accuracy of Fingerprint sensor

Criteria Assessment: Accuracy and Performance
Testing Type: Unit Testing

Preventing Same Voter to Cast Vote In an Event More Than One Time

Criteria Assessment: Security
Testing Type: Unit Testing

Synchronizing Fingerprint Sensor With Vote Casting

Criteria Assessment: Accuracy and Performance
Testing Type: Unit and Component Testing

4 SOFTWARE TESTING

4.1 Development Testing

Tested we have done during the development phase are discussed below:

(a) Unit Testing: Unit testing is the process of testing individual components in isolation. It is a defect testing process. Units may be individual functions or methods within an object or composite components with defined interfaces used to access their functionality. We have done unit testing on the following features.

- Authentication System
- Vote Result Publish
- Accessing Vote Event On Correct Date and Time
- Accuracy of Fingerprint sensor
- Preventing Same Voter to Cast Vote In an Event More Than One Time

(b) Component Testing: Software components are often composite components that are made up of several interacting objects. It should focus on testing component interfaces.

- Vote Event Creation
- Synchronizing Fingerprint Sensor With Vote Casting

5 HARDWARE TESTING

The following modules were tested in the hardware part of our project:

- Fingerprint Sensor
- Barcode Scanner

6 PASS/FAIL CRITERIA

The pass/fail criteria for each feature that will be tested, is given in the below table.

Table 1: Pass/Fail Criteria

Features to be tested	**Pass/fail criteria**
Authentication System	Barcode scan time > 5 seconds or number of attempts > 2
Vote Result Publish	Vote result publish after completion of vote event > 5 min
Accessing Vote Event On Correct Date and Time	Can access to an expired or upcoming vote event
Accuracy of Fingerprint sensor	Fingerprint scan time > 5 seconds or number of attempts > 2
Preventing Same Voter to Cast Vote In an Event More Than One Time	Same voter can cast vote in an event > 1 time
Vote Event Creation	Number of vote event creation attempts > 2 or duplicate vote event is created
Synchronizing Fingerprint Sensor With Vote Casting	Fingerprint matches but vote is not counted

7 TESTING SCHEDULE

Test was done according to the following schedule :

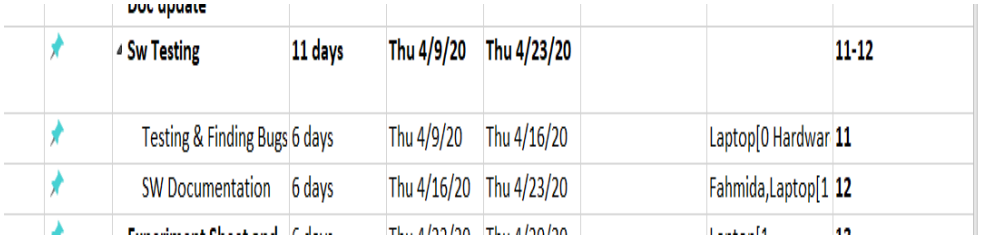

Figure 1: Testing schedule

8 ENVIRONMENTAL REQUIREMENTS

8.1 Hardware

The following items were required in the hardware part of our project:

- Android Device
- Fingerprint Sensor
- Barcode Scanner

8.2 Software

The following items were required in the software part of our project:

- Microsoft Project
- Android Studio
- Firebase database

8.3 Tools

- Balsamiq
- Kalaton

8.4 Risks and Assumptions

There are some potential risks of using this system in real life. The risks are given below:

- If someone steals voter's id card, then he/she will be able to sign in as that voter.
- If there is any internet issue then the app will not work.
- If the id card is not clean enough then the barcode scanner may not work properly.
- If the fingerprint sensor is not clean enough then it may not identify the user's fingerprint.
- Admin has to be careful about publishing results, he should never publish the results before the event being finished.