

Assignment No	5 (Group A-5)
Title	A Mobile App for Calculator having Trigonometry functionality is to be designed and tested. The data storage uses 1.text files, 2. XML. Use latest open source software modeling, Designing and testing tool/ Scrum-it. Implement the design using HTML-5/Scala/ Python/Java/ C++/Rubi on Rails. Perform Positive and Negative testing.
Date	
Signature	

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1. TITLE

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2. PREREQUISITES

- Android Studio/adt-bundle-windows
- Testing tool
- JAVA, XML

3. OBJECTIVE

- To study testing tool.
- To perform Positive and Negative testing.

4. THEORY

Android Studio Overview

Android Studio is the official IDE for Android application development, based on IntelliJ IDEA. On top of the capabilities you expect from IntelliJ, Android Studio offers:

- Flexible Gradle-based build system
- Build variants and multiple apk file generation
- Code templates to help you build common app features
- Rich layout editor with support for drag and drop theme editing
- lint tools to catch performance, usability, version compatibility, and other problems
- Pro Guard and app-signing capabilities
- Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine
- And much more

Android Project Structure

By default, Android Studio displays your project files in the Android project view. This view shows a flattened version of your project's structure that provides quick access to the key source files of Android projects and helps you work with the Gradle-based build system. The Android project view:

- Shows the most important source directories at the top level of the module hierarchy.
- Groups the build files for all modules in a common folder.
- Groups all the manifest files for each module in a common folder.
- Shows resource files from all Gradle source sets.
- Groups resource files for different locales, orientations, and screen types in a single group per resource type

java/ - Source files for the module.
 manifests/ - Manifest files for the module.
 res/ - Resource files for the module.
 Gradle Scripts/ - Gradle build and property files.

Software testing is process of verifying and validating the software or application and checks whether it is working as expected. The intent is to find defects and improve the product quality. There are two ways to test the software viz, **Positive Testing** and **Negative Testing**.

Positive testing can be performed on the system by providing the valid data as input. It checks whether an application behaves as expected with the positive input. This is to test to check the application that does what it is supposed to do so. There is a text box in an application which can accept only numbers. Entering values up to 99999 will be acceptable by the system and any other values apart from this should not be acceptable. To do positive testing, set the valid input values from 0 to 99999 and check whether the system is accepting the values.

Negative Testing can be performed on the system by providing invalid data as input. It checks whether an application behaves as expected with the negative input. This is to test the application that does not do anything that it is not supposed to do so. For example - Negative testing can be performed by testing by entering alphabets characters from A to Z or from a to z. Either system text box should not accept the values or else it should throw an error message for these invalid data inputs.

Positive Testing:

Test Case ID	Expected Result	Actual Result	Status
1	Check if all the numbers are working (0 to 9)	All the numbers are working (0 to 9)	
2	Check if the arithmetic keys (+, -, *, %, /) are working	The arithmetic keys (+, -, *, %, /) are working	
3	Check if the brackets keys are working	The bracket keys are working	
4	Check if the square and square root key is working	The square and square root key is working	
5	Check if the sin, cos, tan, cot keys are working	The sin, cos, tan, cot keys are working	
6	Check if it is showing the correct values for sin, cos, tan and cot	It is showing the correct values for sin, cos, tan and cot	
7	Check the addition of two sin and cos values	The addition of two sin and cos values	
8	Check the addition of two tan and cot values	The addition of two tan and cot values	
9	Check that it is returning the float values or integer values	It is returning the float values or integer values	
10	Check if the functionality using BODMAS/BIDMAS works as expected	Working Properly	

Negative Testing:

Test Case ID	Expected Result	Actual Result	Status
1	Check if it is allowing letters instead of numbers	It is taking only numbers as input	
2	Check if it is returning float values instead of integer	It is returning integer values only	
3	Check if it is returning integer values instead of float	It is returning float values only	
4	Check if the functionality using BODMAS/BIDMAS works as expected	Functioning Properly	

5. MATHEMATICAL MODEL

Let, S be the System Such that,

$A = \{ S, E, I, O, F, DD, NDD, \text{success}, \text{failure} \}$

Where,

S= Start state,

E= End State,

I= Set of Input

O= Set of Out put

F =Set of Function

DD=Deterministic Data

NDD=Non Deterministic Data

Success Case: It is the case when all the inputs are given by system are entered correctly.

Failure Case: It is the case when the input does not match the validation Criteria.

6. CONCLUSION

A Mobile App for Calculator having Trigonometry functionality is designed and tested.

7. REFERENCES

- [1] HASSAN GOMAA, Software Modeling and Design, Cambridge university Press, 2011, ISBN-13 978-1-107-44735-6.
- [2] Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, Design patterns Elements of Reusable Object-Oriented Software
- [3] Srinivasan Desikan, "Software Testing Principals and practices", Pearson Publication ISBN-13 978-8-17-758295-6.

8. FAQ'S

1. What is the difference between positive testing and negative testing?