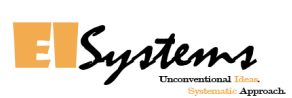
**Technex (IIT BHU) Internship Training Programme**

**Project Title: Calculator (Android App) (Android Application Development)**

**Submitted To :**

### Mr. Mayur Dev Sewak General Manager, Operations Eisystems Services

**&**

Mr. Shailendra Singh  
Trainer, ICT Domain, Logicpro Infosystems  
Eisystems Services

## Submitted By : Yash raj pandey

**B.Tech 3nd Year**

**Sikkim manipal institute of technology ,sikkim**

# Content Table

|  |  |  |
| --- | --- | --- |
| **S.NO.** | **Title** | **Page NO.** |
| 1. | Nomenclatures | 5. |
| 2. | Abstract | 6. |
| 3. | Project Summary | 7. |
| 4. | Objectives of the Project Developed | 8. |
| 5. | Details of Process / Project developed | 9. |
| 6. | Apparatus / Components / System Requirement used | 10. |
| 7. | Data Flow Diagram | 11. |
| 8. | Algorithms | 12. |
| 9. | Input / Output Datasets / Screenshots. | 13. |
| 10. | Images / Video links | 18. |
| 11. | Text / Code / Program if used | 19. |
| 12. | References | 26. |
| 13. | Plagiarism | 27. |
|  |  |  |

2

# List Of Figures

|  |  |  |
| --- | --- | --- |
| **S.NO.** | **Figure’s Name** | **Page NO.** |
| 1. | Figure 1 | 11. |
| 2. | Figure 2 | 13. |
| 3. | Figure 3 | 13. |
| 4. | Figure 4 | 14. |
| 5. | Figure 5 | 15. |
| 6. | Figure 6 | 16. |
| 7. | Figure 7 | 17. |
| 8. | Figure 8 | 18. |

3

# List Of Tables

|  |  |  |
| --- | --- | --- |
| **S.NO.** | **Table Name** | **Page NO.** |
|  | - |  |
|  |  |  |

4

## Nomenclatures/Notations

###### App : Application

* **AVD : Android Virtual Device**

###### BHU : Benaras Hindu University

* **HTTP : Hyper Text Transfer Protocol** ∙ **IIT : Indian Institute Of Technology** ∙ **RAM : Random Access Memory**

###### SDK : Software Development Kit

* **SSD : Solid State Drive**

###### TB : Tera Byte

* **USB : Universal Serial Bus**

###### WWW : World Wide Web

5

## Abstract

This project is prepared as a part of 6 week Online Internship Training Program in Android Application Development organized by Technex (IIT BHU) as a part of its technical fest.It involves the basic implementation of the skills developed during the course of the training. As it is crystal clear from the project title itself i.e. My Calculator App is an android based calculator involving basic backend coding using Java.The designing of both front and back end is done over Android Studio involving App testing using a physical device – Vivo Y30.

It contains a custom launcher icon as well developed using Android Studio Assets which suits the layout, activities and appearance of my app. Upon launching first page contains a button which upon clicking shows a clicked and takes the user to the following page that contains the calculator with basic operations - +, -, x, / and each contains a separate button for their operation. The appearance is quite attractive containing 1 image, 2 placeholders, 1 Answer Box and 4 buttons for 4 operations as mentioned above.

Preparing it I felt was a good start as it is a quite useful and basic app which could prove a foundation for Android Development as it efficiently involved both end codings, problem solving skills and broad mindsets as well.

6

## Project Summary

This project involves the incorporation of the acquired skills of Android Application Development to build an android app using Android Studio and Java Language. As it is crystal clear from the project title itself i.e. My Calculator App is an android based calculator involving basic backend coding using Java.The designing of both front and back end is done over Android Studio involving App testing using a physical device – Vivo Y30.

The images in the app are same as the Launcher Icon which was downloaded from flaticon.com. The custom launcher icon developed using Android Assets Studio which suits the layout, activities and appearance of my app. Upon launching first page contains a button which upon clicking shows a message “clicked” and takes the user to the following page that contains the calculator with basic operations - +, -, x, / and each contains a separate button for their operation. The appearance is quite attractive containing 1 image, 2 placeholders, 1 Answer Box and 4 buttons for 4 operations as mentioned above.

The main activity in its java file contains the use of Intent Class to jump from the current Main Activity to the next Calculation Activity upon the Button Click whose syntax is as follows-

###### “ Intent i=new Intent (main\_activity.this , calculation.class); startActivity(i); ”

Upon arriving on the Calculation activity, User is required to Enter 2 Numbers in the 2 placeholders provided with which he intends to perform calculation. The he is needed to press the required button of operation as per his need.

The result is shown using the Text View Placed Beneath the placeholders and above the buttons which particularly adds “Answer is = “String before showing the Answer.

7

## Objectives of Project

* To implement basics of the learned courses.
* To implement Android Skills.
* To kick start Android Development.
* To develop my first complete App.
* To fulfill the requirement of certification of the Online Internship Training Programme conducted by Technex (IIT BHU) as a part of its cultural fest.

8

## Details of Process / Project developed

At first the Android Studio was downloaded from developers.android.com and then was configured with required settings and few in-situ downloads like that of few SDK PackagesViz. Android SDK 11 ,10, 9 and 5.1 Lollipop. Further few Google play settings were changed and an Emulator or AVD of Pixel 2 with Android OS 11 was installed to test the App virtually. After its successful installation the studio was ready to begin with the first App.

Now , on the home page of the Studio, New Project was selected and was given the name “My Calculator” and Language was selected as Java plus the Android 5 Lollipop was selected as the Minimum OS .The studio took some time for building the gradle and then was ready for further coding with few lines of code available by default. The studio provides us initially with several other files as well but the files which we require essentially are Main Activity Java File available in Java folder for all the Backend Coding of our App and the Main Activity xml File available in res folder to code the design layout of the Main Activity of the App. The Manifest file is required to find out the package name, insert several permissions required in the app , change the Launcher Icon and Launcher Activity as well.

At first the Main Activity’s design layout was coded using the xml file and Linear Layout Container with incorporation of an Image view and a button with ‘proceed’ text upon it. Further the proceed Button was made to work using backend coding in Java by first creating the button object of Button Class and using onClickListener function of App Compat Activity Class and Intent function to made the user jump to next page/activity upon button click.It also includes a Toast function to display a message ‘clicked’ upon button click.

Next a new empty Activity was created and named Calculation and its xml file was first coded to design the layout using Linear Layout Container and 2 Edit Text Views to provide 2 placeholders for user to enter 2 numbers , a textView for app to display the result and 4 Buttons +,-,x and / for

respective operations. Each button were coded at backend separately and were made to display the Result in Text View using setText Function .

Later , the launcher icon was changed from the default android icon to a customized icon by choosing the icon from flaticon.com and editing it as per the needs of being a launcher icon on the Android Asset Studio and was incorporated in the manifest xml file created by th android

studio initially.

Futher the App was tested at each step using Emulator/AVD and upon final completion it was made to run over Physical Device – Vivo Y30 to test its efficiency using Developers Mode and Turning USB Debugging on.

9

## Apparatus / Components / System Requirement used

**System requirements**

### Windows

* + Microsoft® Windows® 7/8/10 (64-bit)
  + 4 GB RAM minimum, 8 GB RAM recommended
  + 2 GB of available disk space minimum,

4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image) ∙ 1280 x 800 minimum screen resolution

### Mac

* + Mac® OS X® 10.10 (Yosemite) or higher, up to 10.14 (macOS Mojave)
  + 4 GB RAM minimum, 8 GB RAM recommended
  + 2 GB of available disk space minimum,

4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image) ∙ 1280 x 800 minimum screen resolution

### Linux

* + GNOME or KDE desktop

*Tested on gLinux based on Debian.*

* + 64-bit distribution capable of running 32-bit applications
  + GNU C Library (glibc) 2.19 or later
  + 4 GB RAM minimum, 8 GB RAM recommended
  + 2 GB of available disk space minimum,

4 GB Recommended (500 MB for IDE + 1.5 GB for Android SDK and emulator system image) ∙ 1280 x 800 minimum screen resolution

### Chrome OS

* + 8 GB RAM or more recommended
  + 4 GB of available disk space minimum
  + 1280 x 800 minimum screen resolution
  + Intel i5 or higher (U series or higher) recommended

10



**My Calculator (App Icon)**

##### +

Performs

##### x Performs

Addition

Multiplication

## Data Flow Diagram

###### Initial Page Containing “Proceed” Button which when clicked shows ‘clicked’ Message And Takes the user To the next Calculation Page.

Calculation Page Contains 2 Placeholders for Entering

Operands , 1 Box to Display Result And 4 Buttons +,-,x and / for respective operations.

-

Performs Subtraction

##### / Performs Division

**Figure 1**

11

## Algorithms

**Step 1:** Start.

**Step 2:** Main Activity’s xml File is first coded and then the functionality to the “proceed” Button is added using Java Intent class which helps user to take him to the next Calculation Page.

**Step 3:** The Calculation Activity’s xml file is coded with Image views , Edit Texts , Text Views and Buttons and then the functionality to the 4 Buttons is added using Java backend code.

**Step 4:** Separate Code was written for displaying the Answer in the Text View Box. **Step 5:**

Stop.

12

## Input / Output Datasets / Screenshots

INITIaL PaGE

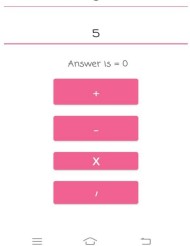


**Figure 3**

**Figure 2**

*Clicked Message Displayed Using Toast*

*in Java.*

13

CaLcULaTION PaGE

String Before

Displaying Answer.

**Figure 4**

Answer when ‘/’ Button Clicked

14

#### OUTpUT

CaLcULaTION PaGE

#### INpUT

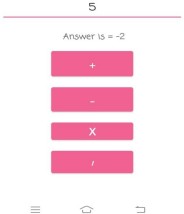
when ‘+’ Button Clicked

Answer

**Figure 5**

15

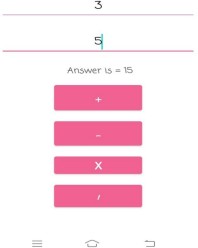
CaLcULaTION PaGE

**Figure 6**

Answer when ‘-’ Button Clicked

16

CaLcULaTION PaGE

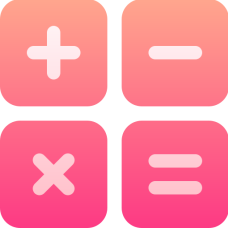
Answer when ‘x’ Button Clicked.

**Figure 7**

17

## Images / Video links

* + **http**[**s://w**](http://www.flaticon.com/free)**ww.**[**flaticon.com/free**](http://www.flaticon.com/free) **icon/calculator\_2995909?related\_id=2995909&origin=search**



**Figure 8**

18

## Text / Code / Program

### Main Activity xml Code

*<?*xml version="1.0" encoding="utf-8"*?>*

<LinearLayout xmlns:andr[oid="h](http://schemas.android.com/apk/res/android)t[tp://schemas.android.c](http://schemas.android.com/apk/res/android)om/[apk/res/android"](http://schemas.android.com/apk/res/android) [xmlns:app="h](http://schemas.android.com/apk/res-auto)ttp://[schemas.andr](http://schemas.android.com/apk/res-auto)oid.c[om/apk/res-auto"](http://schemas.android.com/apk/res-auto) xmlns:t[ools="h](http://schemas.android.com/tools)ttp://[schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent"

android:background="#FFFFFF" android:gravity="center" android:orientation="vertical" tools:context=".MainActivity">

<ImageView android:id="@+id/imageView" android:layout\_width="250dp" android:layout\_height="140dp" android:src="@drawable/calculator" />

<TextView android:id="@+id/textView" android:layout\_width="match\_parent" android:layout\_height="47dp" android:layout\_marginLeft="50dp" android:layout\_marginTop="50dp" android:layout\_marginRight="50dp" android:background="#23F48FB1" android:backgroundTint="#F06292" android:fontFamily="cursive" android:text="My Calculator " android:textAlignment="center" android:textSize="30dp" />

<Button android:id="@+id/btn1"

style="@android:style/Widget.Button" android:layout\_width="113dp" android:layout\_height="wrap\_content" android:layout\_marginTop="60dp" android:background="@empty" android:backgroundTint="#F06292" android:clickable="false"

19

android:fontFamily="monospace"

android:text="Proceed" android:textSize="14sp" android:textStyle="bold" />

</LinearLayout>

### Calculation Activity xml Code

*<?*xml version="1.0" encoding="utf-8"*?>*

<LinearLayout xmlns:andr[oid="h](http://schemas.android.com/apk/res/android)t[tp://schemas.android.c](http://schemas.android.com/apk/res/android)om/[apk/res/android"](http://schemas.android.com/apk/res/android) [xmlns:app="h](http://schemas.android.com/apk/res-auto)ttp://[schemas.andr](http://schemas.android.com/apk/res-auto)oid.c[om/apk/res-auto"](http://schemas.android.com/apk/res-auto) xmlns:t[ools="h](http://schemas.android.com/tools)ttp://[schemas.android.com/tools"](http://schemas.android.com/tools) android:layout\_width="match\_parent" android:layout\_height="match\_parent"

android:layout\_marginLeft="30dp" android:layout\_marginRight="10dp" android:clickable="true" android:foregroundTint="#F06292" android:gravity="center" android:orientation="vertical" android:scrollbars="vertical" android:textAlignment="center" tools:context=".Calculation">

<ImageView android:id="@+id/imageView2" android:layout\_width="184dp" android:layout\_height="199dp" android:layout\_marginTop="20dp" android:layout\_marginBottom="10dp" android:src="@drawable/calculator" />

<EditText android:id="@+id/etFirst"

android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_gravity="center" android:layout\_marginBottom="20dp" android:backgroundTint="#F06292" android:fontFamily="casual" android:foregroundTint="#F06292"

android:hint="Enter 1st Number" android:inputType="number"

20

android:textAlignment="center" android:textStyle="bold" />

<EditText android:id="@+id/etSecond" android:layout\_width="match\_parent"

android:layout\_height="wrap\_content" android:layout\_marginBottom="20dp" android:backgroundTint="#F06292" android:fontFamily="casual" android:foregroundTint="#F06292" android:hint="Enter 2nd Number" android:inputType="number" android:textAlignment="center" android:textStyle="bold" />

<TextView android:id="@+id/textView2" android:layout\_width="match\_parent" android:layout\_height="wrap\_content" android:layout\_marginBottom="10dp" android:fontFamily="casual" android:text="Result" android:textAlignment="center" android:textStyle="bold" />

<Button android:id="@+id/add" android:layout\_width="144dp" android:layout\_height="71dp" android:layout\_gravity="center"

android:layout\_marginBottom="10dp" android:backgroundTint="#F06292" android:fontFamily="casual" android:padding="15dp" android:shadowColor="#FFFFFF" android:text="@string/plus" android:textAlignment="center" android:textColor="#FFFFFF"

android:textSize="18sp" android:textStyle="bold" android:visibility="visible" />

<Button

21

android:id="@+id/subtract" android:layout\_width="144dp" android:layout\_height="71dp" android:layout\_gravity="center" android:layout\_marginBottom="10dp" android:backgroundTint="#F06292" android:clickable="false" android:fontFamily="casual" android:padding="15dp" android:shadowColor="#FFFFFF" android:text="@string/minus" android:textAlignment="center" android:textColor="#FFFFFF" android:textSize="18sp" android:textStyle="bold" android:visibility="visible" />

<Button android:id="@+id/product" android:layout\_width="144dp" android:layout\_height="71dp" android:layout\_gravity="center"

android:layout\_marginBottom="10dp" android:backgroundTint="#F06292" android:fontFamily="monospace" android:shadowColor="#FFFFFF" android:text="@string/cross" android:textAlignment="center" android:textColor="#FFFFFF" android:textSize="18sp" android:textStyle="bold" android:visibility="visible" />

<Button android:id="@+id/divide" android:layout\_width="144dp"

android:layout\_height="71dp" android:layout\_gravity="center" android:layout\_marginBottom="10dp" android:backgroundTint="#F06292" android:fontFamily="casual" android:padding="15dp" android:scrollbars="vertical" android:shadowColor="#FFFFFF"

22

android:text="@string/slash" android:textAlignment="center" android:textColor="#FFFFFF" android:textSize="18sp" android:textStyle="bold" android:visibility="visible" />

</LinearLayout>

### Main Activity Java Code

package com.mycalculator;

import android.content.Intent; import android.os.Bundle; import android.view.View; import android.widget.Button; import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity { Button btn1;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.*activity\_main*); btn1=findViewById(R.id.*btn1*); btn1.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) {

Toast.*makeText*(getApplicationContext() , "Clicked",Toast.*LENGTH\_SHORT*).show(); Intent i

= new Intent ( MainActivity.this , Calculation.class); startActivity(i);

}

});

}

}

23

### Calculation Activity Java Code

package com.mycalculator;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent; import android.os.Bundle; import android.view.View; import android.widget.Button; import android.widget.EditText; import android.widget.TextView;

public class Calculation extends AppCompatActivity {

EditText etFirstValue , etSecondValue; TextView tvAns;

Button add , subtract , product , divide;

@Override

protected void onCreate(Bundle savedInstanceState) { super.onCreate(savedInstanceState); setContentView(R.layout.*activity\_calculation*); etFirstValue = findViewById(R.id.*etFirst*); etSecondValue = findViewById(R.id.*etSecond*);

add = findViewById(R.id.*add*);

subtract = findViewById(R.id.*subtract*); product = findViewById(R.id.*product*); divide = findViewById(R.id.*divide*);

tvAns = findViewById(R.id.*textView2*);

add.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) { int a,b,c;

a = Integer.*parseInt*(etFirstValue.getText().toString()); b = Integer.*parseInt*(etSecondValue.getText().toString()); c = a+b; tvAns.setText(" Answer is = "+c);

}

});

subtract.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) {

24

int a,b,c;

a = Integer.*parseInt*(etFirstValue.getText().toString()); b = Integer.*parseInt*(etSecondValue.getText().toString()); c = a-b; tvAns.setText(" Answer is = "+c);

}

});

product.setOnClickListener(new View.OnClickListener() { @Override

public void onClick(View v) { int a,b,c;

a = Integer.*parseInt*(etFirstValue.getText().toString()); b = Integer.*parseInt*(etSecondValue.getText().toString()); c = a\*b; tvAns.setText(" Answer is = "+c);

}

});

divide.setOnClickListener(new View.OnClickListener() { @Override public void onClick(View v) {

int a,b,c;

a = Integer.*parseInt*(etFirstValue.getText().toString()); b = Integer.*parseInt*(etSecondValue.getText().toString()); c = a/b; tvAns.setText(" Answer is = "+c);

}

});

}

}

25

## References

###### https://developers.google.com

* + **https://developers.android.com**
  + **http**[**s://w**](http://www.google.com/)**ww.g[oogle.com](http://www.google.com/)**
  + **http**[**s://w**](http://www.youtube.com/)**ww.y[outube.com](http://www.youtube.com/)**
  + **http**[**s://w**](http://www.gotomeeting.com/)**ww.g**[**otomeeting.com**](http://www.gotomeeting.com/)
  + **http**[**s://w**](http://www.flaticon.com/)**ww.**[**flaticon.com**](http://www.flaticon.com/)
  + **http**[**s://w**](http://www.flaticon.com/free)**ww.**[**flaticon.com/free**](http://www.flaticon.com/free) **icon/calculator\_2995909?related\_id=2995909&origin=search**

26

## Plagiarism Report

2