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**Green University of Bangladesh**

**Department of Computer Science and Engineering (CSE)**

**Faculty of Sciences and Engineering**

**Semester: (Fall, Year:2024, B.Sc. in CSE (Day)**

**Lab Report NO #07**

**Course Title: Mobile Application Development**

**Course Code: CSE-402 Section: 213 D-3**

**Lab Experiment Name: Design and Development of a Calculator Application**

**Student Details**

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**Lab Date : 11.27.2024**

**Submission Date : 12.01.2024**

**Course Teacher’s Name** **: Md. Jahid Tanvir**

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| **Lab Report Status**  **Marks: ………………………………… Signature:.....................**  **Comments:.............................................. Date:..............................** |

**1.TITLE OF THE LAB REPORT EXPERIMENT**

Design a **calculator** and a Log-in page using **Grid Layout**.

**2. OBJECTIVES**

* To develop the Calculator application in Android device
* Implement the arithmetic based on the Calculator.
* To Design the nice Login Page.

**3. PROCEDURE**

* Create Layout

Design the interface with buttons for numbers (0-9) and operations (+, -, \*, /), and a display area .

* Add Listeners

Assign actions to buttons so they can handle user inputs.

* Perform Calculations

Process the input and calculate results based on the selected operation.

* Show Results

Display the output in the display area after performing the calculation.

* Test

Test all functions and fix any errors.

**4. IMPLEMENTATION:**

**Solution : 1**

**ActivityMain.java**

package com.example.claculattor;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.Button;

import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

Button button0, button1, button2, button3, button4, button5, button6,

button7, button8, button9, buttonadd, buttonSub, buttonDiv,

buttonMul, buttonPoint, buttonReset, buttonEqual;

EditText eT;

float ValueOne, ValueTwo, result;

boolean Addition, Subtract, Multiplication, Division;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

// Referencing

button0 = findViewById(R.id.btnZero);

button1 = findViewById(R.id.btnOne);

button2 = findViewById(R.id.btnTwo);

button3 = findViewById(R.id.btnThree);

button4 = findViewById(R.id.btnFour);

button5 = findViewById(R.id.btnFive);

button6 = findViewById(R.id.btnSix);

button7 = findViewById(R.id.btnSeven);

button8 = findViewById(R.id.btnEight);

button9 = findViewById(R.id.btnNine);

buttonPoint = findViewById(R.id.btnPoint);

buttonadd = findViewById(R.id.btnadd);

buttonSub = findViewById(R.id.btnSub);

buttonMul = findViewById(R.id.btnMul);

buttonDiv = findViewById(R.id.btnDiv);

buttonReset = findViewById(R.id.btnReset);

buttonEqual = findViewById(R.id.btnEqual);

eT = findViewById(R.id.eT);

eT = findViewById(R.id.eT);

eT.setText(&quot;0&quot;);

// Event Listeners

button1.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;1&quot;);

}

});

button2.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;2&quot;);

}

});

button3.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;3&quot;);

}

});

button4.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;4&quot;);

}

});

button5.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;5&quot;);

}

});

button6.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;6&quot;);

}

});

button7.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;7&quot;);

}

});

button8.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;8&quot;);

}

});

button9.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;9&quot;);

}

});

button0.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;0&quot;);

}

});

buttonReset.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(&quot;&quot;);

}

});

buttonPoint.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

eT.setText(eT.getText() + &quot;.&quot;);

}

});

buttonadd.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

ValueOne = Float.parseFloat(eT.getText().toString());

Addition = true;

eT.setText(null);

}

});

buttonSub.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

ValueOne = Float.parseFloat(eT.getText().toString());

Subtract = true;

eT.setText(null);

}

});

buttonMul.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

ValueOne = Float.parseFloat(eT.getText().toString());

Multiplication = true;

eT.setText(null);

}

});

buttonDiv.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

ValueOne = Float.parseFloat(eT.getText().toString());

Division = true;

eT.setText(null);

}

});

buttonEqual.setOnClickListener(new View.OnClickListener() {

@Override

public void onClick(View v) {

ValueTwo = Float.parseFloat(eT.getText().toString());

if (Addition) {

result = ValueOne + ValueTwo;

eT.setText(String.valueOf(result));

Addition = false;

}

if (Subtract) {

result = ValueOne - ValueTwo;

eT.setText(String.valueOf(result));

Subtract = false;

}

if (Multiplication) {

result = ValueOne \* ValueTwo;

eT.setText(String.valueOf(result));

Multiplication = false;

}

if (Division) {

result = ValueOne / ValueTwo;

eT.setText(String.valueOf(result));

Division = false;

}}});}}

**ActivityMain.XML**

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

<GridLayout

xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:orientation="vertical"

android:padding="16dp">

<EditText

android:id="@+id/eT"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:inputType="none"

android:focusable="false"

android:textSize="24sp"

android:padding="16dp"

android:background="@android:color/transparent"

android:hint="0"

android:gravity="end"/>

<GridLayout

android:layout\_width="match\_parent"

android:layout\_height="0dp"

android:layout\_weight="1"

android:columnCount="4"

android:rowCount="5"

android:padding="8dp">

<Button

android:id="@+id/btnZero"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="0"

android:textSize="18sp"/>

<Button

android:id="@+id/btnOne"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="1"

android:textSize="18sp"/>

<Button

android:id="@+id/btnTwo"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="2"

android:textSize="18sp"/>

<Button

android:id="@+id/btnThree"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="3"

android:textSize="18sp"/>

<Button

android:id="@+id/btnFour"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="4"

android:textSize="18sp"/>

<Button

android:id="@+id/btnFive"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="5"

android:textSize="18sp"/>

<Button

android:id="@+id/btnSix"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="6"

android:textSize="18sp"/>

<Button

android:id="@+id/btnSeven"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="7"

android:textSize="18sp"/>

<Button

android:id="@+id/btnEight"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="8"

android:textSize="18sp"/>

<Button

android:id="@+id/btnNine"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="9"

android:textSize="18sp"/>

<Button

android:id="@+id/btnPoint"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="."

android:textSize="18sp"/>

<Button

android:id="@+id/btnadd"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="+"

android:textSize="18sp"/>

<Button

android:id="@+id/btnSub"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="-"

android:textSize="18sp"/>

<Button

android:id="@+id/btnMul"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="\*"

android:textSize="18sp"/>

<Button

android:id="@+id/btnDiv"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="/"

android:textSize="18sp"/>

<Button

android:id="@+id/btnReset"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="C"

android:textSize="18sp"/>

<Button

android:id="@+id/btnEqual"

android:layout\_width="0dp"

android:layout\_height="wrap\_content"

android:layout\_columnWeight="1"

android:text="="

android:layout\_columnSpan="4"

android:background="@color/accent\_gray" />

</GridLayout>

</GridLayout>

**Solution :2**

XML:

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

<GridLayout

xmlns:android="http://schemas.android.com/apk/res/android"

android:layout\_width="match\_parent"

android:layout\_height="match\_parent"

android:rowCount="5"

android:columnCount="1"

android:padding="16dp"

android:gravity="center"

android:background="#f5f5f5">

<!-- App Logo -->

<ImageView

android:id="@+id/appLogo"

android:layout\_width="120dp"

android:layout\_height="120dp"

android:layout\_gravity="center"

android:src="@drawable/ic\_launcher\_foreground"

android:contentDescription="App Logo"

android:layout\_marginBottom="24dp" />

<!-- Email Input -->

<EditText

android:id="@+id/emailInput"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Email"

android:inputType="textEmailAddress"

android:padding="12dp"

android:layout\_marginBottom="16dp"

android:layout\_columnSpan="1" />

<!-- Password Input -->

<EditText

android:id="@+id/passwordInput"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:hint="Password"

android:inputType="textPassword"

android:padding="12dp"

android:layout\_marginBottom="24dp"

android:layout\_columnSpan="1" />

<!-- Login Button -->

<Button

android:id="@+id/loginButton"

android:layout\_width="match\_parent"

android:layout\_height="wrap\_content"

android:text="Login"

android:textSize="18sp"

android:padding="12dp"

android:backgroundTint="#6200EE"

android:textColor="#FFFFFF"

android:layout\_columnSpan="1" />

<!-- Forgot Password Text -->

<TextView

android:id="@+id/forgotPassword"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Forgot Password?"

android:textColor="#6200EE"

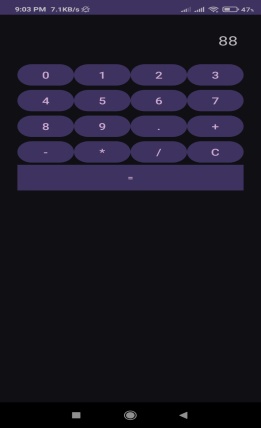
android:layout\_gravity="center"

android:layout\_marginTop="16dp"

android:layout\_columnSpan="1" />

</GridLayout>

**OUTPUT:1**

**+=**

**Output:2**

