**TASK NO.1**

Create Calculator application and persist result in shared preferences.

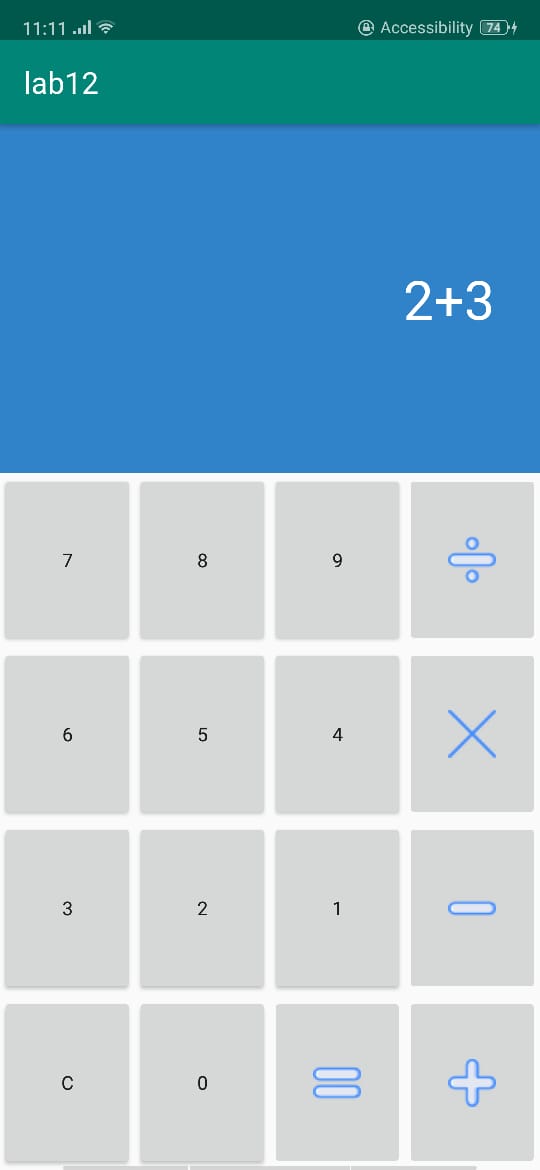
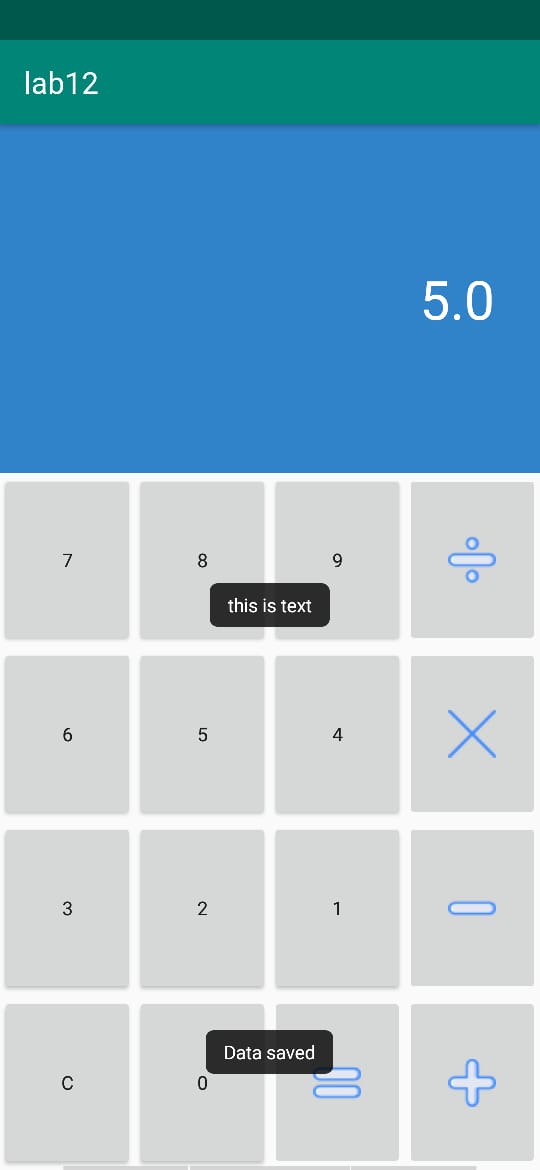
Activity\_main.xml:

*<?*xml version="1.0" encoding="utf-8"*?>*<LinearLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity"  
 android:orientation="vertical">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="2"  
 android:orientation="horizontal"  
 android:background="#3183C9">  
  
 <TextView  
 android:id="@+id/result\_text\_view"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:text="0"  
 android:gravity="center\_vertical"  
 android:paddingRight="30dp"  
 android:textAlignment="viewEnd"  
 android:textColor="#FFF"  
 android:textSize="40sp"  
 />  
  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_7"  
 android:onClick="addValueInView"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_8"  
 android:onClick="addValueInView"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_9"  
 android:onClick="addValueInView"/>  
 <ImageButton  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:src="@drawable/division"  
 android:onClick="buttonDivide"/>  
  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_6"  
 android:onClick="addValueInView"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_5"  
 android:onClick="addValueInView"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_4"  
 android:onClick="addValueInView"/>  
 <ImageButton  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:src="@drawable/multiply"  
 android:onClick="buttonMultiply"/>  
  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_3"  
 android:onClick="addValueInView"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_2"  
 android:onClick="addValueInView"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_1"  
 android:onClick="addValueInView"/>  
 <ImageButton  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:src="@drawable/minus"  
 android:onClick="buttonSubtract"/>  
  
 </LinearLayout>  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="0dp"  
 android:layout\_weight="1"  
 android:orientation="horizontal">  
  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/c"  
 android:onClick="buttonClear"/>  
 <Button  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:text="@string/\_0"  
 android:onClick="addValueInView"/>  
 <ImageButton  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:src="@drawable/equal"  
 android:onClick="buttonEqual"/>  
 <ImageButton  
 android:layout\_width="0dp"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:src="@drawable/plus"  
 android:onClick="buttonAdd"/>  
  
 </LinearLayout>  
  
</LinearLayout>

MainActivity.java:

package com.example.lab12;  
  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.util.Log;  
import android.view.Gravity;  
import android.view.View;  
import android.widget.Button;  
import android.widget.TextView;  
import android.widget.Toast;  
import android.content.SharedPreferences;  
  
public class MainActivity extends AppCompatActivity {  
  
 public static final String *SHARED\_PREFS* = "sharedPrefs";  
 public static final String *TEXT* = "text";  
  
 TextView textView;  
  
 private String text;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 textView = (TextView)findViewById(R.id.*result\_text\_view*);  
  
 loadData();  
 updateViews();  
 }  
 public void applyToast(View v){  
 Toast t = Toast.*makeText*(this,"this is text",Toast.*LENGTH\_SHORT*);  
 t.setGravity(Gravity.*CENTER\_HORIZONTAL*,0,0);  
 t.show();  
 }  
  
 public void buttonClear(View v){  
 TextView text = (TextView)findViewById(R.id.*result\_text\_view*);  
  
 text.setText("0");  
 }  
  
 public void addValueInView(View v){  
 Button btn = (Button) v;  
 String text = btn.getText().toString();  
  
 TextView view = (TextView)findViewById(R.id.*result\_text\_view*);  
 if(view.getText().toString().equals("0")){  
 view.setText("");  
 view.append(text);  
 }  
 else{  
 view.append(text);  
 }  
 }  
  
 public void buttonDivide(View v){  
 v = (TextView)findViewById(R.id.*result\_text\_view*);  
  
 ((TextView)v).append("/");  
  
  
  
 }  
  
 public void buttonMultiply(View v){  
 v = (TextView)findViewById(R.id.*result\_text\_view*);  
  
 ((TextView)v).append("\*");  
 }  
  
 public void buttonSubtract(View v){  
 v = (TextView)findViewById(R.id.*result\_text\_view*);  
  
 ((TextView)v).append("-");  
 }  
  
 public void buttonAdd(View v){  
 v = (TextView)findViewById(R.id.*result\_text\_view*);  
  
 ((TextView)v).append("+");  
 }  
  
 public void buttonEqual(View v){  
 v = (TextView)findViewById(R.id.*result\_text\_view*);  
 try {  
 if (((TextView) v).getText().toString().contains("/")) {  
 int index = ((TextView) v).getText().toString().indexOf('/');  
  
 String stringNum1 = ((TextView) v).getText().toString().substring(0, index);  
 String stringNum2 = ((TextView) v).getText().toString().substring(index+1);  
  
 double num1 = Double.*valueOf*(stringNum1);  
 double num2 = Double.*valueOf*(stringNum2);  
  
 double ans = num1 / num2;  
  
 ((TextView) v).setText(String.*valueOf*(ans));  
 }  
 else if (((TextView) v).getText().toString().contains("+")) {  
 int index = ((TextView) v).getText().toString().indexOf('+');  
  
 String stringNum1 = ((TextView) v).getText().toString().substring(0, index);  
 String stringNum2 = ((TextView) v).getText().toString().substring(index+1);  
  
 double num1 = Double.*valueOf*(stringNum1);  
 double num2 = Double.*valueOf*(stringNum2);  
  
 double ans = num1 + num2;  
  
 ((TextView) v).setText(String.*valueOf*(ans));  
 }  
 else if (((TextView) v).getText().toString().contains("\*")) {  
 int index = ((TextView) v).getText().toString().indexOf('\*');  
  
 String stringNum1 = ((TextView) v).getText().toString().substring(0, index);  
 String stringNum2 = ((TextView) v).getText().toString().substring(index+1);  
  
 double num1 = Double.*valueOf*(stringNum1);  
 double num2 = Double.*valueOf*(stringNum2);  
  
 double ans = num1\*num2;  
  
 ((TextView) v).setText(String.*valueOf*(ans));  
 }  
 else if (((TextView) v).getText().toString().contains("-")) {  
 int index = ((TextView) v).getText().toString().indexOf('-');  
  
 String stringNum1 = ((TextView) v).getText().toString().substring(0, index);  
 String stringNum2 = ((TextView) v).getText().toString().substring(index+1);  
  
 double num1 = Double.*valueOf*(stringNum1);  
 double num2 = Double.*valueOf*(stringNum2);  
  
 double ans = num1-num2;  
  
 ((TextView) v).setText(String.*valueOf*(ans));  
 }  
 }catch (Exception e){  
 Log.*e*("error","Exception: "+e);  
 }  
 finally {  
 saveData();  
 }  
  
 Toast t = Toast.*makeText*(this,"this is text",Toast.*LENGTH\_SHORT*);  
 t.setGravity(Gravity.*CENTER\_HORIZONTAL*,0,0);  
 t.show();  
 }  
  
 public void saveData() {  
 SharedPreferences sharedPreferences = getSharedPreferences(*SHARED\_PREFS*, *MODE\_PRIVATE*);  
 SharedPreferences.Editor editor = sharedPreferences.edit();  
  
 editor.putString(*TEXT*, textView.getText().toString());  
  
 editor.apply();  
  
 Toast.*makeText*(this, "Data saved", Toast.*LENGTH\_SHORT*).show();  
 }  
  
 public void loadData() {  
 SharedPreferences sharedPreferences = getSharedPreferences(*SHARED\_PREFS*, *MODE\_PRIVATE*);  
 text = sharedPreferences.getString(*TEXT*, "");  
 }  
  
 public void updateViews() {  
 textView.setText(text);  
 }  
}

**OUTPUT:**

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