**Task#1:** Create Calculator application and persist result in shared preferences.

**Solution:**

**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"  
 android:weightSum="6">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:gravity="center\_horizontal|center\_vertical"  
 android:layout\_weight="6">  
  
 <TextView  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:background="@color/output"  
 android:id="@+id/textview"  
 android:gravity="center\_vertical"  
 android:layout\_gravity="center\_vertical"  
 android:textAlignment="textEnd"  
 android:textColor="@color/white"  
 android:textSize="40sp" />  
  
 </LinearLayout>  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:background="@color/white"  
 android:gravity="center\_horizontal|center\_vertical"  
 android:orientation="horizontal"  
 android:weightSum="4">  
  
  
 <Button  
 android:id="@+id/btn7"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="7"  
 android:textSize="40sp" />  
  
 <Button  
 android:id="@+id/btn8"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="8"  
 android:textSize="40sp" />  
  
 <Button  
 android:id="@+id/btn9"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="9"  
 android:textSize="40sp" />  
  
 <Button  
 android:id="@+id/btnDiv"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/calculation"  
 android:text="%"  
 android:textColor="@color/white"  
 android:textSize="40sp" />  
  
 </LinearLayout>  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:gravity="center\_horizontal|center\_vertical"  
 android:orientation="horizontal"  
 android:weightSum="4"  
 android:background="@color/white">  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn4"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="4"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn5"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="5"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn6"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="6"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btnMul"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/calculation"  
 android:text="\*"  
 android:textColor="@color/white"  
 android:textSize="40sp" />  
  
  
 </LinearLayout>  
  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:gravity="center\_horizontal|center\_vertical"  
 android:orientation="horizontal"  
 android:weightSum="4"  
 android:background="@color/white">  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn1"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="1"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn2"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="2"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn3"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="3"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btnSub"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/calculation"  
 android:text="-"  
 android:textColor="@color/white"  
 android:textSize="40sp" />  
  
 </LinearLayout>  
  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:gravity="center\_horizontal|center\_vertical"  
 android:orientation="horizontal"  
 android:weightSum="4"  
 android:background="@color/white">  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btnClear"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/Clear"  
 android:text="C"  
 android:textColor="@color/white"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btn0"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/white"  
 android:text="0"  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btnEqual"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/yellow"  
 android:text="="  
 android:textSize="40sp" />  
  
 <Button  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:id="@+id/btnAdd"  
 android:width="100dp"  
 android:height="100dp"  
 android:background="@color/calculation"  
 android:text="+"  
 android:textColor="@color/white"  
 android:textSize="40sp" />  
  
 </LinearLayout>  
  
  
  
</LinearLayout>

**JAVA:**

public class MainActivity extends AppCompatActivity {  
  
 Button btn1,btn2,btn3,btn4,btn5,btn6,btn7,btn8,btn9,btn0,btnAdd,btnSub,btnMul,btnDiv,btnEqual,btnClear;  
 TextView textview;  
 float Res1,Res2;  
 boolean Add,Sub,Mul,Div;  
  
 public static final String *SHARED\_PREFS* = "sharedPrefs";  
 public static final String *TEXT* = "text";  
 private String text;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 btn1=(Button)findViewById(R.id.*btn1*);  
 btn2=(Button)findViewById(R.id.*btn2*);  
 btn3=(Button)findViewById(R.id.*btn3*);  
 btn4=(Button)findViewById(R.id.*btn4*);  
 btn5=(Button)findViewById(R.id.*btn5*);  
 btn6=(Button)findViewById(R.id.*btn6*);  
 btn7=(Button)findViewById(R.id.*btn7*);  
 btn8=(Button)findViewById(R.id.*btn8*);  
 btn9=(Button)findViewById(R.id.*btn9*);  
 btn0=(Button)findViewById(R.id.*btn0*);  
 btnAdd=(Button)findViewById(R.id.*btnAdd*);  
 btnSub=(Button)findViewById(R.id.*btnSub*);  
 btnMul=(Button)findViewById(R.id.*btnMul*);  
 btnDiv=(Button)findViewById(R.id.*btnDiv*);  
 btnEqual=(Button)findViewById(R.id.*btnEqual*);  
 btnClear=(Button)findViewById(R.id.*btnClear*);  
 textview=(TextView)findViewById(R.id.*textview*);  
  
  
 btn1.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"1");  
 }  
 });  
  
 btn2.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"2");  
 }  
 });  
  
 btn3.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"3");  
 }  
 });  
  
 btn4.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"4");  
 }  
 });  
  
 btn5.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"5");  
 }  
 });  
  
 btn6.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"6");  
 }  
 });  
  
 btn7.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"7");  
 }  
 });  
  
 btn8.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"8");  
 }  
 });  
  
 btn9.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"9");  
 }  
 });  
  
 btn0.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText(textview.getText()+"0");  
 }  
 });  
  
  
  
 btnAdd.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if(textview==null){  
 textview.setText("");  
 }  
 else {  
 Res1=Float.*parseFloat*(textview.getText()+"");  
 Add=true;  
 textview.setText(null);  
 }  
 }  
 });  
  
 btnSub.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if(textview==null){  
 textview.setText("");  
 }  
 else {  
 Res1=Float.*parseFloat*(textview.getText()+"");  
 Sub=true;  
 textview.setText(null);  
 }  
 }  
 });  
  
 btnMul.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if(textview==null){  
 textview.setText("");  
 }  
 else {  
 Res1=Float.*parseFloat*(textview.getText()+"");  
 Mul=true;  
 textview.setText(null);  
 }  
 }  
 });  
  
 btnDiv.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if(textview==null){  
 textview.setText("");  
 }  
 else {  
 Res1=Float.*parseFloat*(textview.getText()+"");  
 Div=true;  
 textview.setText(null);  
 }  
 }  
 });  
  
  
 btnEqual.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Res2=Float.*parseFloat*(textview.getText()+"");  
 if(Add==true){  
 textview.setText(Res1+Res2+"");  
 Add=false;  
 }  
 if(Sub==true){  
 textview.setText(Res1-Res2+"");  
 Sub=false;  
 }  
 if(Mul==true){  
 textview.setText(Res1\*Res2+"");  
 Mul=false;  
 }  
 if(Div==true){  
 textview.setText(Res1/Res2+"");  
 Div=false;  
 }  
 saveData();  
 }  
 });  
  
 btnClear.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 textview.setText("");  
 }  
 });  
  
 loadData();  
 updateViews();  
  
 }  
  
  
 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:**

