Android Assignment

Calculator Application

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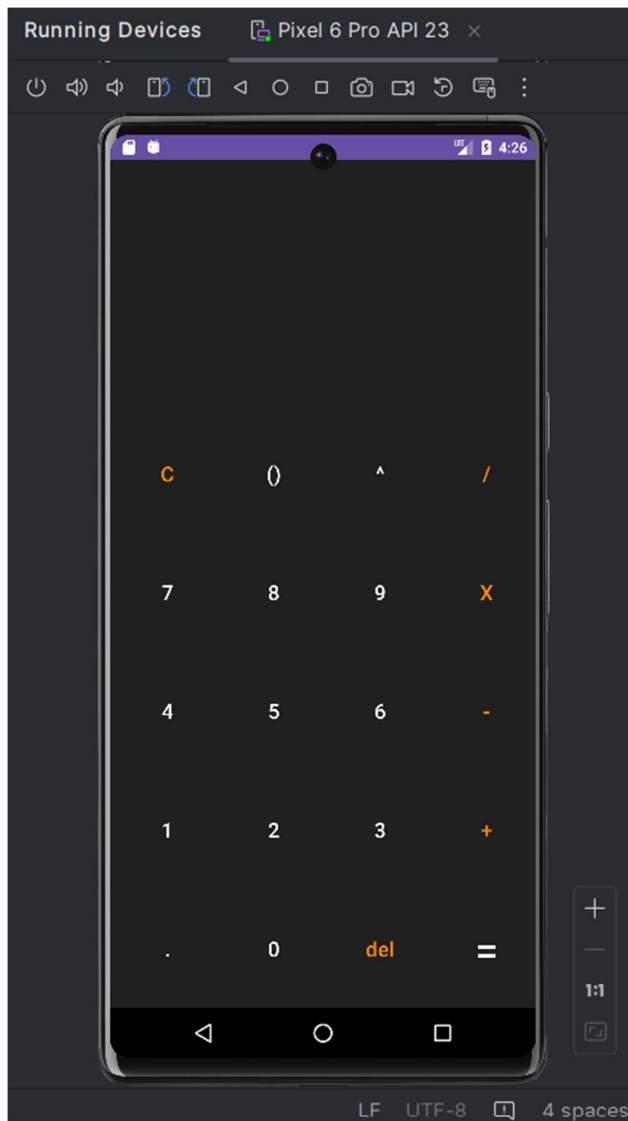
SCS2324038

19/2/2024

Android Assignment

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Q] Create an Android Calculator app for basic arithmetic calculations .(Use of decimal no will be an added advantage). The layout should resemble the general calculator app available in Android phones.

Code:

Ui:

MainActivity.java file:

```java
package com.example.mycalculator;

import android.os.Bundle;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

import java.util.ArrayList;

import javax.script.ScriptEngine;
import javax.script.ScriptEngineManager;
import javax.script.ScriptException;

public class MainActivity extends AppCompatActivity
{

    TextView workingsTV;
    TextView resultsTV;

    String workings = "";
    String formula = "";
    String tempFormula = "";

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        initTextViews();
    }

    private void initTextViews()
    {
        workingsTV = (TextView)findViewById(R.id.workingsTextView);
        resultsTV = (TextView)findViewById(R.id.resultTextView);
    }

    private void setWorkings(String givenValue)
    {
        workings = workings + givenValue;
        workingsTV.setText(workings);
    }


    public void equalsOnClick(View view)
    {
        Double result = null;
        ScriptEngine engine = new
ScriptEngineManager().getEngineByName("rhino");
        checkForPowerOf();

        try {
            result = (double)engine.eval(formula);
        } catch (ScriptException e)
        {
            Toast.makeText(this, "Invalid Input",
Toast.LENGTH_SHORT).show();
```

```java
        }

        if(result != null)
            resultsTV.setText(String.valueOf(result.doubleValue()));

    }

    private void checkForPowerOf()
    {
        ArrayList<Integer> indexOfPowers = new ArrayList<>();
        for(int i = 0; i < workings.length(); i++)
        {
            if (workings.charAt(i) == '^')
                indexOfPowers.add(i);
        }

        formula = workings;
        tempFormula = workings;
        for(Integer index: indexOfPowers)
        {
            changeFormula(index);
        }
        formula = tempFormula;
    }

    private void changeFormula(Integer index)
    {
        String numberLeft = "";
        String numberRight = "";

        for(int i = index + 1; i< workings.length(); i++)
        {
            if(isNumeric(workings.charAt(i)))
                numberRight = numberRight + workings.charAt(i);
            else
                break;
        }

        for(int i = index - 1; i >= 0; i--)
        {
            if(isNumeric(workings.charAt(i)))
                numberLeft = numberLeft + workings.charAt(i);
            else
                break;
        }

        String original = numberLeft + "^" + numberRight;
        String changed = "Math.pow("+numberLeft+","+numberRight+")";
        tempFormula = tempFormula.replace(original,changed);
    }

    private boolean isNumeric(char c)
    {
        if((c <= '9' && c >= '0') || c == '.')
            return true;

        return false;
    }


    public void clearOnClick(View view)
```

```java
    {
        workingsTV.setText("");
        workings = "";
        resultsTV.setText("");
        leftBracket = true;
    }

    boolean leftBracket = true;

    public void bracketsOnClick(View view)
    {
        if(leftBracket)
        {
            setWorkings("(");
            leftBracket = false;
        }
        else
        {
            setWorkings(")");
            leftBracket = true;
        }
    }

    public void powerOfOnClick(View view)
    {
        setWorkings("^");
    }

    public void divisionOnClick(View view)
    {
        setWorkings("/");
    }

    public void sevenOnClick(View view)
    {
        setWorkings("7");
    }

    public void eightOnClick(View view)
    {
        setWorkings("8");
    }

    public void nineOnClick(View view)
    {
        setWorkings("9");
    }

    public void multiplyOnClick(View view)
    {
        setWorkings("*");
    }

    public void fourOnClick(View view)
    {
        setWorkings("4");
    }

    public void fiveOnClick(View view)
    {
        setWorkings("5");
```

```java
    }

    public void sixOnClick(View view)
    {
        setWorkings("6");
    }

    public void subtractOnClick(View view)
    {
        setWorkings("-");
    }

    public void oneOnClick(View view)
    {
        setWorkings("1");
    }

    public void twoOnClick(View view)
    {
        setWorkings("2");
    }

    public void threeOnClick(View view)
    {
        setWorkings("3");
    }

    public void additionOnClick(View view)
    {
        setWorkings("+");
    }

    public void decimalOnClick(View view)
    {
        setWorkings(".");
    }

    public void zeroOnClick(View view)
    {
        setWorkings("0");
    }

    public void deleteOnClick(View view) {
        if (!workings.isEmpty()) {
            // Remove the last character
            workings = workings.substring(0, workings.length() - 1);
            // Update the TextView to reflect the change
            workingsTV.setText(workings);
        }

    }
}
```

activity_main.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
```

```xml
        android:orientation="vertical"
        android:background="@color/darkGrey"
        tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:orientation="vertical"
        android:layout_weight="3">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="0dp"
            android:paddingEnd="30dp"
            android:layout_weight="1"
            android:gravity="center_vertical"
            android:textColor="@color/white"
            android:text="2 + 3"
            android:layout_gravity="end"
            android:textAlignment="textEnd"
            android:textSize="45sp"
            android:id="@+id/workingsTextView"

tools:ignore="HardcodedText,NestedWeights,RtlCompat,RtlSymmetry" />

        <TextView
            android:layout_width="wrap_content"
            android:paddingRight="30dp"
            android:layout_height="0dp"
            android:layout_weight="1"
            android:gravity="center_vertical"
            android:textColor="@color/white"
            android:text="5"
            android:textAlignment="textEnd"
            android:layout_gravity="end"
            android:textSize="45sp"
            android:id="@+id/resultTextView"
            tools:ignore="HardcodedText,RtlCompat,RtlHardcoded,RtlSymmetry"
/>

    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:orientation="vertical"
        android:layout_weight="7">

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="0dp"
            android:layout_weight="1"
            tools:ignore="NestedWeights">

            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/orange"
```

```xml
                android:onClick="clearOnClick"
                android:text="C"
                style="?android:attr/buttonBarButtonStyle"

tools:ignore="HardcodedText,NestedWeights,UsingOnClickInXml"/>

            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/white"
                android:onClick="bracketsOnClick"
                android:text="()"
                style="?android:attr/buttonBarButtonStyle"
                tools:ignore="HardcodedText,UsingOnClickInXml"/>

            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/white"
                android:onClick="powerOfOnClick"
                android:text="^"
                style="?android:attr/buttonBarButtonStyle"
                tools:ignore="HardcodedText,UsingOnClickInXml"/>

            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/orange"
                android:onClick="divisionOnClick"
                android:text="/"
                style="?android:attr/buttonBarButtonStyle"
                tools:ignore="HardcodedText,UsingOnClickInXml"/>

        </LinearLayout>
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="0dp"
            android:layout_weight="1">
        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/white"
            android:onClick="sevenOnClick"
            android:text="7"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml"/>

        <Button
            android:layout_width="0dp"
```

```xml
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:textSize="@dimen/calcButtonTextSize"
        android:background="@null"
        android:textColor="@color/white"
        android:onClick="eightOnClick"
        android:text="8"
        style="?android:attr/buttonBarButtonStyle"
        tools:ignore="HardcodedText,UsingOnClickInXml"/>

    <Button
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:textSize="@dimen/calcButtonTextSize"
        android:background="@null"
        android:textColor="@color/white"
        android:onClick="nineOnClick"
        android:text="9"
        style="?android:attr/buttonBarButtonStyle"
        tools:ignore="HardcodedText,UsingOnClickInXml"/>

    <Button
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:textSize="@dimen/calcButtonTextSize"
        android:background="@null"
        android:textColor="@color/orange"
        android:onClick="multiplyOnClick"
        android:text="X"
        style="?android:attr/buttonBarButtonStyle"
        tools:ignore="HardcodedText,UsingOnClickInXml"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="0dp"
    android:layout_weight="1">
    <Button
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:textSize="@dimen/calcButtonTextSize"
        android:background="@null"
        android:textColor="@color/white"
        android:onClick="fourOnClick"
        android:text="4"
        style="?android:attr/buttonBarButtonStyle"
        tools:ignore="HardcodedText,UsingOnClickInXml"/>

    <Button
        android:layout_width="0dp"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:textSize="@dimen/calcButtonTextSize"
        android:background="@null"
        android:textColor="@color/white"
        android:onClick="fiveOnClick"
        android:text="5"
        style="?android:attr/buttonBarButtonStyle"
```

```xml
                    tools:ignore="HardcodedText,UsingOnClickInXml"/>

        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/white"
            android:onClick="sixOnClick"
            android:text="6"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml"/>

        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/orange"
            android:onClick="subtractOnClick"
            android:text="-"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml"/>
    </LinearLayout>
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="0dp"
            android:layout_weight="1">
            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/white"
                android:onClick="oneOnClick"
                android:text="1"
                tools:ignore="HardcodedText,UsingOnClickInXml"
                style="?android:attr/buttonBarButtonStyle" />

            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/white"
                android:onClick="twoOnClick"
                android:text="2"
                style="?android:attr/buttonBarButtonStyle"
                tools:ignore="HardcodedText,UsingOnClickInXml" />

            <Button
                android:layout_width="0dp"
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="@dimen/calcButtonTextSize"
                android:background="@null"
                android:textColor="@color/white"
```

```xml
            android:onClick="threeOnClick"
            android:text="3"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml" />

        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/orange"
            android:onClick="additionOnClick"
            android:text="+"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml" />

    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="0dp"
        android:layout_weight="1">

        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/white"
            android:onClick="decimalOnClick"
            android:text="."
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml" />

        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/white"
            android:onClick="zeroOnClick"
            android:text="0"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml"/>
        <Button
            android:layout_width="0dp"
            android:layout_height="match_parent"
            android:layout_weight="1"
            android:textSize="@dimen/calcButtonTextSize"
            android:background="@null"
            android:textColor="@color/orange"
            android:onClick="deleteOnClick"
            android:text="del"
            style="?android:attr/buttonBarButtonStyle"
            tools:ignore="HardcodedText,UsingOnClickInXml"/>

        <Button
            android:layout_width="0dp"
```

```xml
                android:layout_height="match_parent"
                android:layout_weight="1"
                android:textSize="40sp"
                android:background="@color/orange"
                android:textColor="@color/white"
                android:onClick="equalsOnClick"
                android:text="="
                style="?android:attr/buttonBarButtonStyle"
                tools:ignore="HardcodedText,UsingOnClickInXml"/>

        </LinearLayout>
    </LinearLayout>
</LinearLayout>
```

colors.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="colorPrimary">#6200EE</color>
    <color name="colorPrimaryDark">#3700B3</color>
    <color name="colorAccent">#03DAC5</color>
    <color name="black">#FF000000</color>
    <color name="red">#B22222</color>
    <color name="white">#FFFFFF</color>
    <color name="darkGrey">#202020</color>
    <color name="orange">#FF8C00</color>

</resources>
```

dimensions.xml:

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="calcButtonTextSize">20sp</dimen>
</resources>
```

build.gradle.kts(:app):

```kotlin
plugins {
    id("com.android.application")
}

android {
    namespace = "com.example.mycalculator"
    compileSdk = 34

    defaultConfig {
        applicationId = "com.example.mycalculator"
        minSdk = 21
        targetSdk = 34
        versionCode = 1
        versionName = "1.0"

        testInstrumentationRunner =
"androidx.test.runner.AndroidJUnitRunner"
    }

    buildTypes {
        release {
            isMinifyEnabled = false
```

```
            proguardFiles(getDefaultProguardFile("proguard-android-
optimize.txt"), "proguard-rules.pro")
        }
    }
    compileOptions {
        sourceCompatibility = JavaVersion.VERSION_1_8
        targetCompatibility = JavaVersion.VERSION_1_8
    }
}

dependencies {

    implementation("androidx.appcompat:appcompat:1.6.1")
    implementation("com.google.android.material:material:1.11.0")
    implementation("androidx.constraintlayout:constraintlayout:2.1.4")
    implementation("io.apisense:rhino-android:1.0")
    testImplementation("junit:junit:4.13.2")
    androidTestImplementation("androidx.test.ext:junit:1.1.5")
    androidTestImplementation("androidx.test.espresso:espresso-core:3.5.1")
}
```
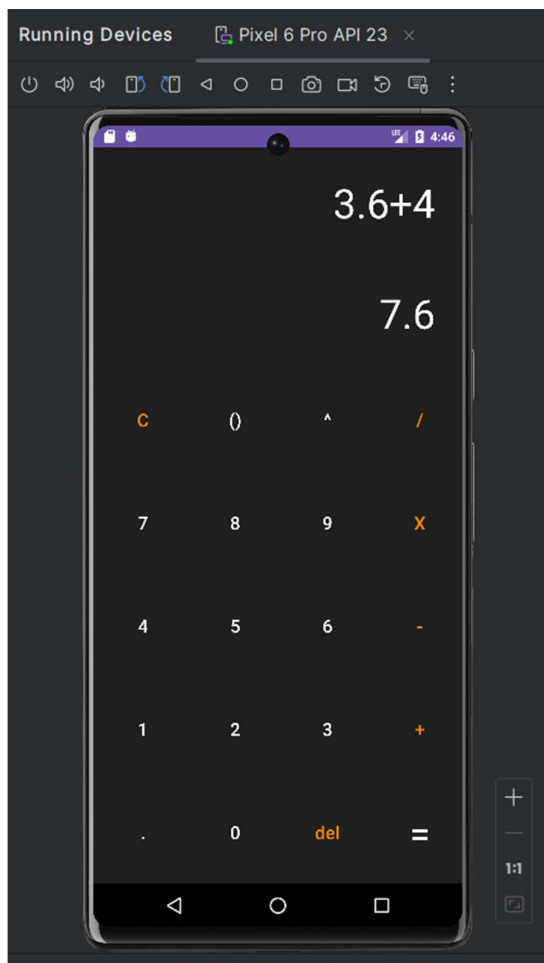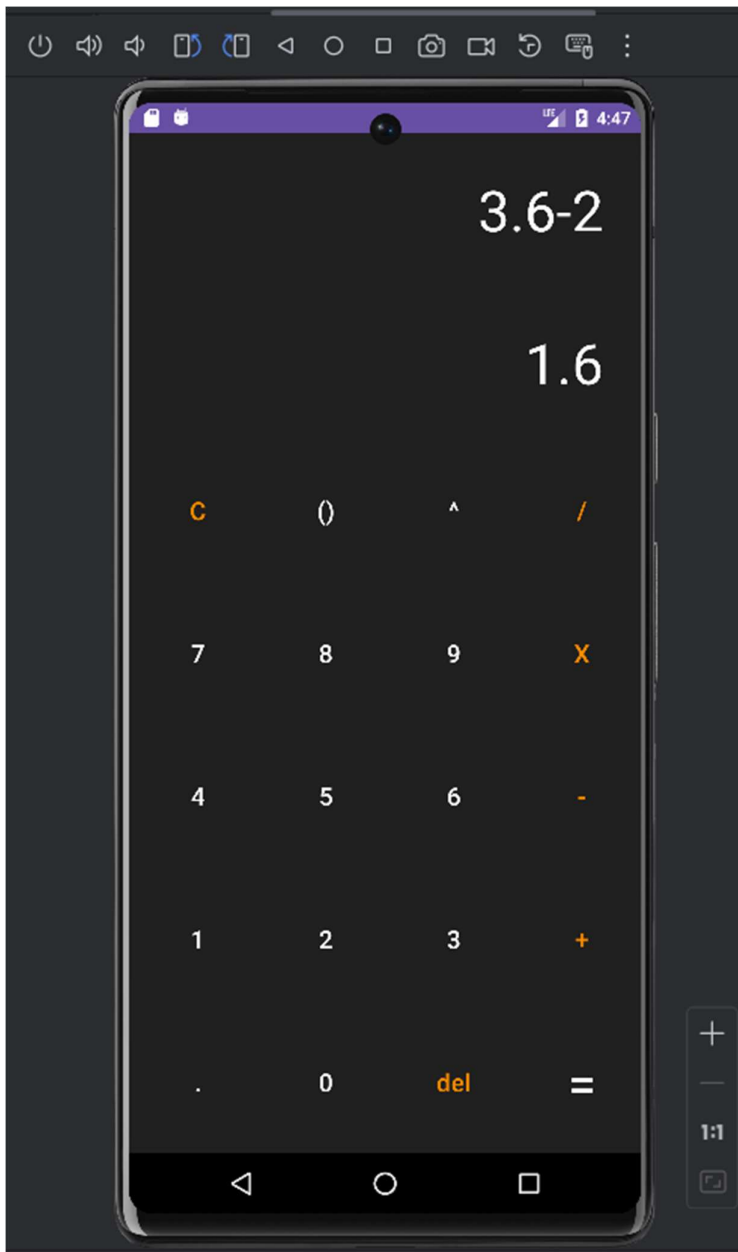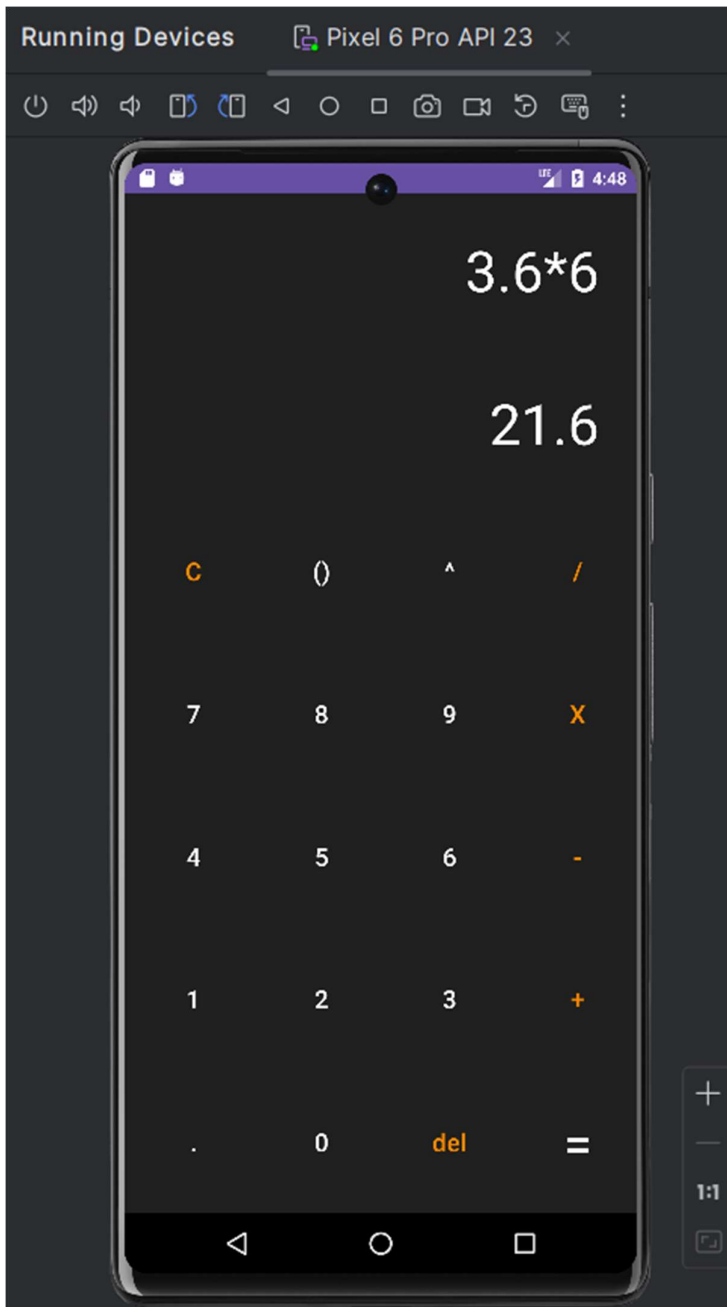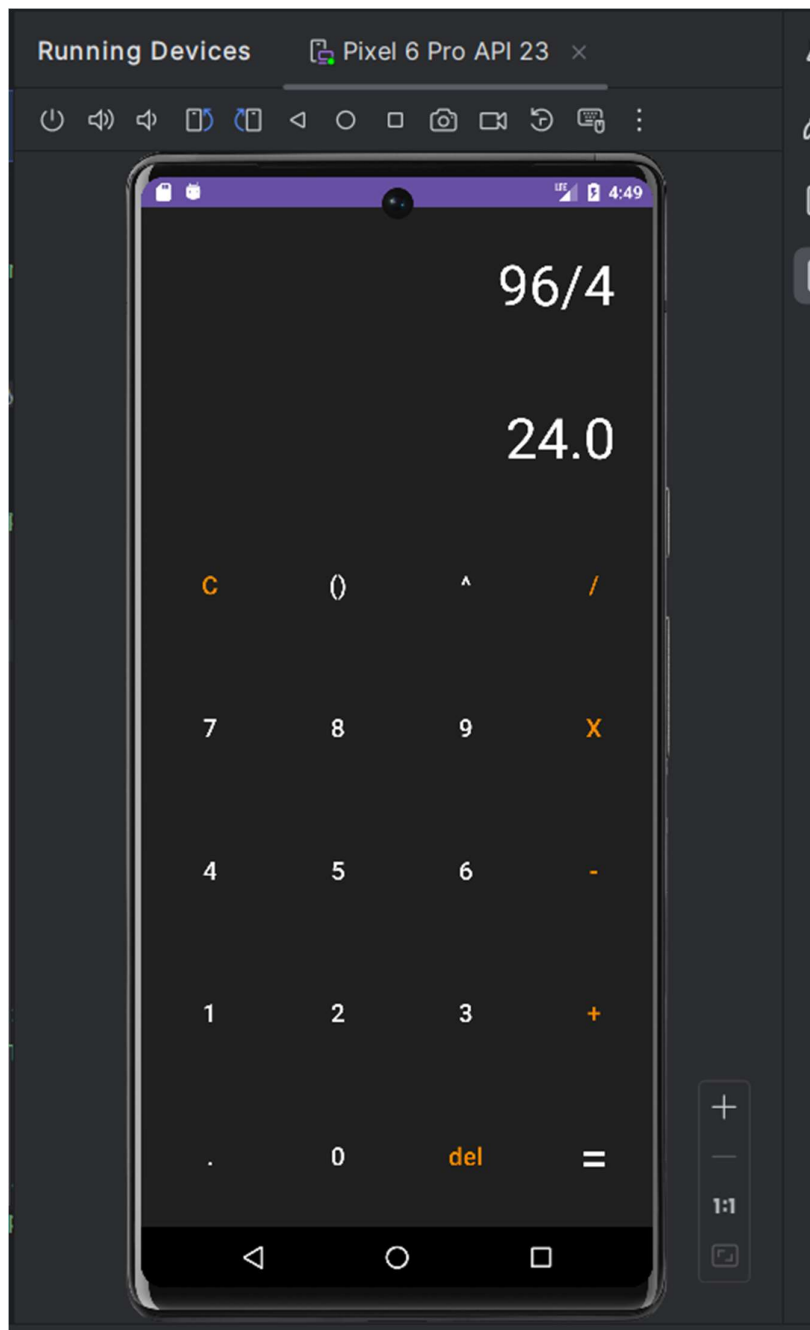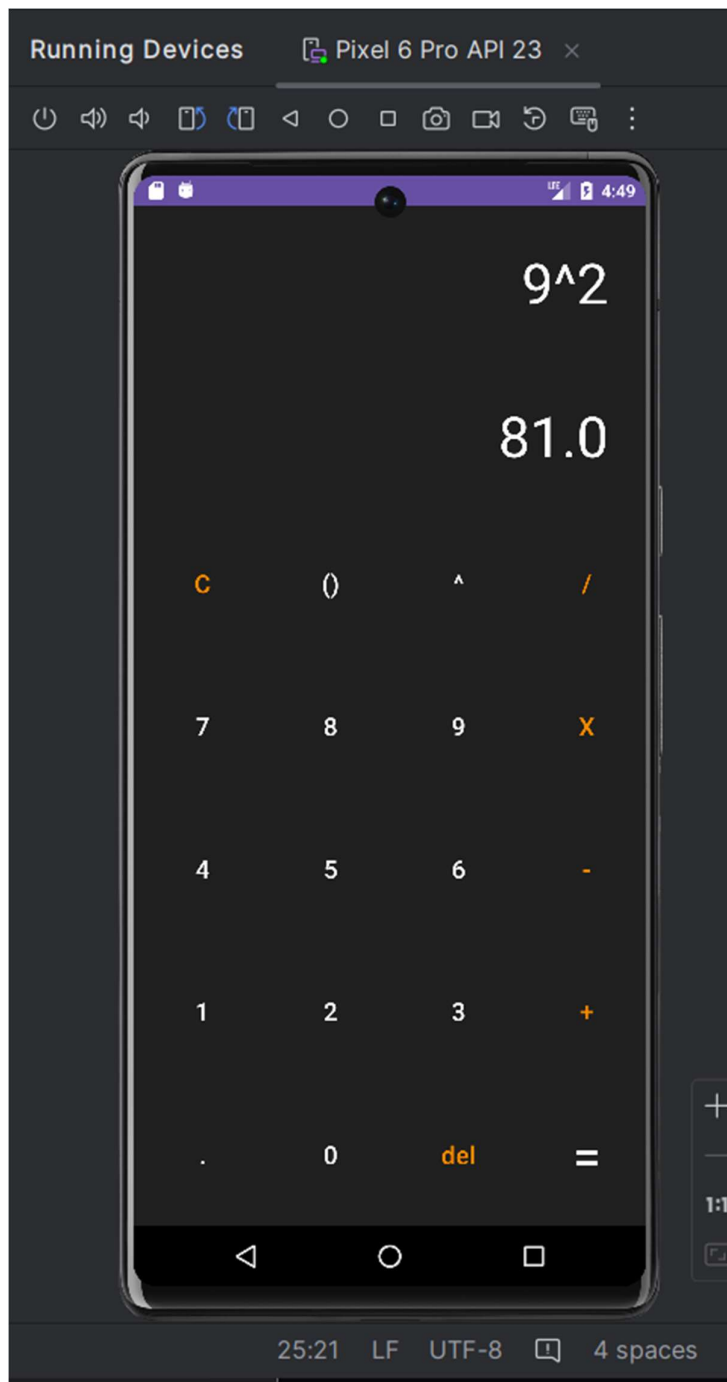
Output:
Performing some operations:-

3.6*6

21.6

C	()	^	/
7	8	9	X
4	5	6	-
1	2	3	+
.	0	del	=

96/4

24.0

C	()	^	/
7	8	9	X
4	5	6	-
1	2	3	+
.	0	del	=

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9^2

81.0

C	()	^	/
7	8	9	X
4	5	6	-
1	2	3	+
.	0	del	=

25:21   LF   UTF-8   4 spaces

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(6+2)*6-3

45.0

C	( )	^	/
7	8	9	X
4	5	6	-
1	2	3	+
.	0	del	=

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