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Reg. No.	:	**18 5001 194**	**Date** : 23/07/2021
Subject	:	**UCS1711---Mobile Application Development Lab**	

QUESTION :

Ex. No. 2 Develop a Calculator and Keyboard

CALCULATOR

CODE :

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"
    android:background="#ecf0f1"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.3"
        android:orientation="horizontal">

        <TextView
            android:id="@+id/display"
            android:layout_width="match_parent"
```

```xml
        android:layout_height="match_parent"
        android:background="#ecf0f1"
        android:textSize="30sp" />
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/buttonDel"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/button"
        android:text="C"
        android:textColor="#FF0000"
        android:textSize="30sp" />

    <Button
        android:id="@+id/buttoneql"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/button"
        android:text="="
        android:textColor="#ecf0f1"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="1"
        android:textColor="#ecf0f1"
```

```xml
            android:textSize="20sp" />

        <Button
            android:id="@+id/button2"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:background="@drawable/selector"
            android:text="2"
            android:textColor="#ecf0f1"
            android:textSize="20sp" />

        <Button
            android:id="@+id/button3"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:background="@drawable/selector"
            android:text="3"
            android:textColor="#ecf0f1"
            android:textSize="20sp" />

        <Button
            android:id="@+id/buttondiv"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:background="@drawable/operator_selector"
            android:text="/"
            android:textColor="#FF000000"
            android:textSize="30sp" />

    </LinearLayout>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="0.2"
        android:orientation="horizontal">

        <Button
            android:id="@+id/button4"
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:layout_margin="1dp"
            android:layout_weight="0.25"
            android:background="@drawable/selector"
```

```xml
        android:text="4"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button5"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="5"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button6"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="6"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttonsub"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_selector"
        android:text="-"
        android:textColor="#FF000000"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button7"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
```

```xml
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="7"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button8"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="8"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button9"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="9"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/buttonmul"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_selector"
        android:text="x"
        android:textColor="#FF000000"
        android:textSize="30sp" />

</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_weight="0.2"
    android:orientation="horizontal">

    <Button
        android:id="@+id/buttonDot"
        android:layout_width="wrap_content"
```

```xml
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="."
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/button0"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/selector"
        android:text="0"
        android:textColor="#ecf0f1"
        android:textSize="20sp" />

    <Button
        android:id="@+id/Remainder"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_selector"
        android:text="%"
        android:textColor="#FF000000"
        android:textSize="30sp" />

    <Button
        android:id="@+id/buttonadd"
        android:layout_width="wrap_content"
        android:layout_height="match_parent"
        android:layout_margin="1dp"
        android:layout_weight="0.25"
        android:background="@drawable/operator_selector"
        android:text="+"
        android:textColor="#FF000000"
        android:textSize="30sp" />

    </LinearLayout>


</LinearLayout>
```

MainActivity.java :

```java
package com.example.calc_2;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

//import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;


public class MainActivity extends AppCompatActivity {

    double input1 = 0, input2 = 0;
    TextView edt1;
    boolean Addition, Subtract, Multiplication, Division, mRemainder, decimal;
    Button button0, button1, button2, button3, button4, button5, button6,
button7, button8, button9, buttonAdd, buttonSub,
            buttonMul, buttonDivision, buttonEqual, buttonDel, buttonDot,
Remainder;

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

        button0 = (Button) findViewById(R.id.button0);
        button1 = (Button) findViewById(R.id.button1);
        button2 = (Button) findViewById(R.id.button2);
        button3 = (Button) findViewById(R.id.button3);
        button4 = (Button) findViewById(R.id.button4);
        button5 = (Button) findViewById(R.id.button5);
        button6 = (Button) findViewById(R.id.button6);
        button7 = (Button) findViewById(R.id.button7);
        button8 = (Button) findViewById(R.id.button8);
        button9 = (Button) findViewById(R.id.button9);
        buttonDot = (Button) findViewById(R.id.buttonDot);
        buttonAdd = (Button) findViewById(R.id.buttonadd);
        buttonSub = (Button) findViewById(R.id.buttonsub);
        buttonMul = (Button) findViewById(R.id.buttonmul);
        buttonDivision = (Button) findViewById(R.id.buttondiv);
        Remainder = (Button) findViewById(R.id.Remainder);
        buttonDel = (Button) findViewById(R.id.buttonDel);
        buttonEqual = (Button) findViewById(R.id.buttoneql);

        edt1 = (TextView) findViewById(R.id.display);

        button1.setOnClickListener(new View.OnClickListener() {
            @Override
```

```java
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "1");
            }
        });

        button2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "2");
            }
        });

        button3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "3");
            }
        });

        button4.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "4");
            }
        });

        button5.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "5");
            }
        });

        button6.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "6");
            }
        });

        button7.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "7");
            }
        });

        button8.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText(edt1.getText() + "8");
            }
        });

        button9.setOnClickListener(new View.OnClickListener() {
            @Override
```

```java
        public void onClick(View v) {
            edt1.setText(edt1.getText() + "9");
        }
    });

    button0.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            edt1.setText(edt1.getText() + "0");
        }
    });

    buttonAdd.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Addition = true;
                decimal = false;
                edt1.setText(null);
            }
        }
    });

    buttonSub.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Subtract = true;
                decimal = false;
                edt1.setText(null);
            }
        }
    });

    buttonMul.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Multiplication = true;
                decimal = false;
                edt1.setText(null);
            }
        }
    });

    buttonDivision.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (edt1.getText().length() != 0) {
                input1 = Float.parseFloat(edt1.getText() + "");
                Division = true;
                decimal = false;
                edt1.setText(null);
```

```java
                }
            }
        });

        Remainder.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (edt1.getText().length() != 0) {
                    input1 = Float.parseFloat(edt1.getText() + "");
                    mRemainder = true;
                    decimal = false;
                    edt1.setText(null);
                }
            }
        });

        buttonEqual.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (Addition || Subtract || Multiplication || Division ||
mRemainder) {
                    input2 = Float.parseFloat(edt1.getText() + "");
                }

                if (Addition) {

                    edt1.setText(input1 + input2 + "");
                    Addition = false;
                }

                if (Subtract) {

                    edt1.setText(input1 - input2 + "");
                    Subtract = false;
                }

                if (Multiplication) {
                    edt1.setText(input1 * input2 + "");
                    Multiplication = false;
                }

                if (Division) {
                    edt1.setText(input1 / input2 + "");
                    Division = false;
                }
                if (mRemainder) {
                    edt1.setText(input1 % input2 + "");
                    mRemainder = false;
                }
            }
        });

        buttonDel.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                edt1.setText("");
```

```java
            input1 = 0.0;
            input2 = 0.0;
        }
    });

    buttonDot.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if (decimal) {
                //do nothing or you can show the error
            } else {
                edt1.setText(edt1.getText() + ".");
                decimal = true;
            }

        }
    });
    }
}
```

colors.xml :

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="selected">#999998</color>
    <color name="btn_clr">#FFA520</color>

</resources>
```

operator_selector.xml :

```xml
<?xml version="1.0" encoding="utf-8"?>
<selector xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:state_pressed="false"
        android:state_focused="false">
        <shape
```

```xml
            xmlns:android="http://schemas.android.com/apk/res/android"
            android:shape="rectangle"
            android:useLevel="false">
            <corners android:radius="30px"/>
            <solid android:color="@color/btn_clr"/>

            <padding
                android:left="5dp"
                android:top="5dp"
                android:right="3dp"
                android:bottom="3dp"/>
        </shape>
    </item>

    <item android:state_pressed="false"
          android:state_focused="true">
        <shape
            xmlns:android="http://schemas.android.com/apk/res/android"
            android:shape="rectangle"
            android:useLevel="false">
            <corners android:radius="30px"/>
            <solid android:color="@color/selected"/>

            <padding
                android:left="5dp"
                android:top="5dp"
                android:right="3dp"
                android:bottom="3dp"/>
        </shape>
    </item>

    <item android:state_pressed="true"
          android:state_focused="false">
        <shape
            xmlns:android="http://schemas.android.com/apk/res/android"
            android:shape="rectangle"
            android:useLevel="false">
            <corners android:radius="30px"/>
            <solid android:color="@color/selected"/>

            <padding
                android:left="5dp"
                android:top="5dp"
                android:right="3dp"
                android:bottom="3dp"/>
        </shape>
    </item>

</selector>
```
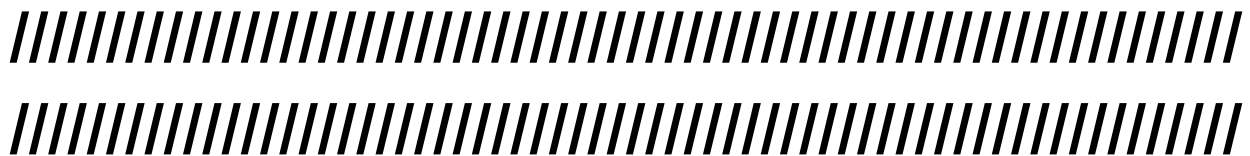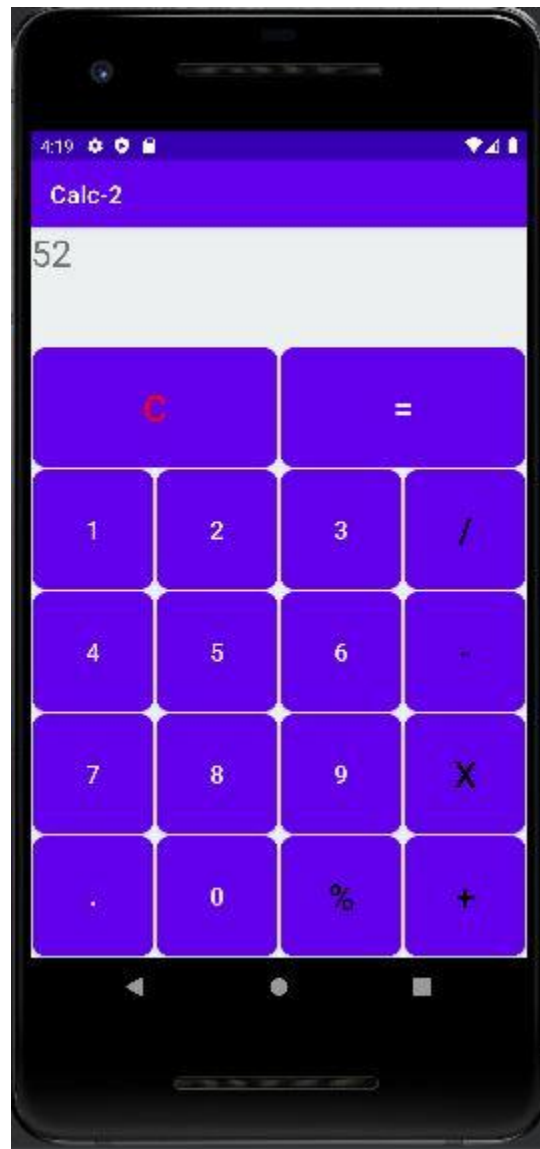
Output :

//
//

KEYBOARD

activity_main.xml :

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

<RelativeLayout 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"
    tools:context="com.example.keyboard_2.MainActivity">

    <EditText
        android:id="@+id/display"
        android:layout_width="309dp"
        android:layout_height="107dp"
        android:layout_alignParentTop="true"
        android:layout_marginStart="50dp"
        android:layout_marginLeft="50dp"
        android:layout_marginTop="50dp"
        android:layout_marginEnd="50dp"
        android:layout_marginRight="50dp"
        android:background="#ffff22"
        android:padding="5dp"
        android:textColor="#000000"
        android:textSize="20dp"/>

    <com.example.keyboard_2.CustomKeyboard
        android:id="@+id/keyboard"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:layout_marginBottom="30dp"
        android:layout_marginLeft="5dp"
        android:layout_marginRight="5dp"
        android:layout_alignParentBottom="true"
        />

</RelativeLayout>
```

MainActivity.java :

```java
package com.example.keyboard_2;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.text.InputType;
import android.view.inputmethod.EditorInfo;
import android.view.inputmethod.InputConnection;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

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

        EditText editText = (EditText) findViewById(R.id.display);
        CustomKeyboard keyboard = (CustomKeyboard)
findViewById(R.id.keyboard);
        editText.setRawInputType(InputType.TYPE_CLASS_TEXT);
        editText.setTextIsSelectable(true);

        InputConnection ic = editText.onCreateInputConnection(new
EditorInfo());
        keyboard.setInputConnection(ic);
    }
}
```

keyboard.xml :

```xml
<?xml version="1.0" encoding="utf-8"?>
<merge xmlns:android="http://schemas.android.com/apk/res/android">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">

        <Button
            android:id="@+id/button_1"
```

```xml
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="1"/>

    <Button
        android:id="@+id/button_2"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="2"/>

    <Button
        android:id="@+id/button_3"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="3"/>

    <Button
        android:id="@+id/button_4"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="4"/>

    <Button
        android:id="@+id/button_5"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="5"/>

    <Button
        android:id="@+id/button_6"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
```

```xml
        android:text="6"/>

    <Button
        android:id="@+id/button_7"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="7"/>

    <Button
        android:id="@+id/button_8"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="8"/>

    <Button
        android:id="@+id/button_9"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="9"/>

    <Button
        android:id="@+id/button_0"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="0"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button_q"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
```

```xml
        android:textColor="@android:color/white"
        android:text="q"/>

    <Button
        android:id="@+id/button_w"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="w"/>

    <Button
        android:id="@+id/button_e"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="e"/>

    <Button
        android:id="@+id/button_r"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="r"/>

    <Button
        android:id="@+id/button_t"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="t"/>

    <Button
        android:id="@+id/button_y"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="y"/>

    <Button
        android:id="@+id/button_u"
```

```xml
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="u"/>

    <Button
        android:id="@+id/button_i"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="i"/>

    <Button
        android:id="@+id/button_o"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="o"/>

    <Button
        android:id="@+id/button_p"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="p"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button_a"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="a"/>

    <Button
```

```xml
        android:id="@+id/button_s"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="s"/>

    <Button
        android:id="@+id/button_d"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="d"/>

    <Button
        android:id="@+id/button_f"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="f"/>

    <Button
        android:id="@+id/button_g"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="g"/>

    <Button
        android:id="@+id/button_h"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="h"/>

    <Button
        android:id="@+id/button_j"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
```

```xml
        android:textColor="@android:color/white"
        android:text="j"/>

    <Button
        android:id="@+id/button_k"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="k"/>

    <Button
        android:id="@+id/button_l"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="l"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button_z"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="z"/>

    <Button
        android:id="@+id/button_x"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="x"/>

    <Button
        android:id="@+id/button_c"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
```

```xml
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="c"/>

    <Button
        android:id="@+id/button_v"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="v"/>

    <Button
        android:id="@+id/button_b"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="b"/>

    <Button
        android:id="@+id/button_n"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="n"/>

    <Button
        android:id="@+id/button_m"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:background="#98FB98"
        android:textColor="@android:color/white"
        android:text="m"/>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">

    <Button
        android:id="@+id/button_delete"
        android:layout_width="20dp"
        android:layout_height="wrap_content"
```

```xml
            android:layout_weight="2"
            android:background="#98FB98"
            android:textColor="@android:color/white"
            android:text="⌫  backspace"/>

        <Button
            android:id="@+id/button_enter"
            android:layout_width="20dp"
            android:layout_height="wrap_content"
            android:layout_weight="3"
            android:background="#98FB98"
            android:textColor="@android:color/white"
            android:text="↵ Enter"/>


    </LinearLayout>
</merge>
```

CustomKeyboard.java :

```java
package com.example.keyboard_2;

import android.content.Context;
import android.text.TextUtils;
import android.util.AttributeSet;
import android.util.SparseArray;
import android.view.LayoutInflater;
import android.view.View;
import android.view.inputmethod.InputConnection;
import android.widget.Button;
import android.widget.LinearLayout;

public class CustomKeyboard extends LinearLayout implements
View.OnClickListener {

    private Button button1, button2, button3, button4,
            button5, button6, button7, button8,
            button9, button0, buttonDelete, buttonEnter;

    private Button
buttona,buttonb,buttonc,buttond,buttone,buttonf,buttong,buttonh,buttoni,

buttonj,buttonk,buttonl,buttonm,buttonn,buttono,buttonp,buttonq,buttonr,
            buttons,buttont,buttonu,buttonv,buttonw,buttonx,buttony,buttonz;
```

```java
    private SparseArray<String> keyValues = new SparseArray<>();
    private InputConnection inputConnection;

    public CustomKeyboard(Context context) {
        this(context, null, 0);
    }

    public CustomKeyboard(Context context, AttributeSet attrs) {
        this(context, attrs, 0);
    }

    public CustomKeyboard(Context context, AttributeSet attrs, int
defStyleAttr) {
        super(context, attrs, defStyleAttr);
        init(context, attrs);
    }

    private void init(Context context, AttributeSet attrs) {
        LayoutInflater.from(context).inflate(R.layout.keyboard, this, true);
        button1 = (Button) findViewById(R.id.button_1);
        button1.setOnClickListener(this);
        button2 = (Button) findViewById(R.id.button_2);
        button2.setOnClickListener(this);
        button3 = (Button) findViewById(R.id.button_3);
        button3.setOnClickListener(this);
        button4 = (Button) findViewById(R.id.button_4);
        button4.setOnClickListener(this);
        button5 = (Button) findViewById(R.id.button_5);
        button5.setOnClickListener(this);
        button6 = (Button) findViewById(R.id.button_6);
        button6.setOnClickListener(this);
        button7 = (Button) findViewById(R.id.button_7);
        button7.setOnClickListener(this);
        button8 = (Button) findViewById(R.id.button_8);
        button8.setOnClickListener(this);
        button9 = (Button) findViewById(R.id.button_9);
        button9.setOnClickListener(this);
        button0 = (Button) findViewById(R.id.button_0);
        button0.setOnClickListener(this);
        buttonDelete = (Button) findViewById(R.id.button_delete);
        buttonDelete.setOnClickListener(this);
        buttonEnter = (Button) findViewById(R.id.button_enter);
        buttonEnter.setOnClickListener(this);

        buttona = (Button) findViewById(R.id.button_a);buttonb = (Button)
findViewById(R.id.button_b);
        buttona.setOnClickListener(this);buttonb.setOnClickListener(this);
        buttonc = (Button) findViewById(R.id.button_c);buttond = (Button)
findViewById(R.id.button_d);
        buttonc.setOnClickListener(this);buttond.setOnClickListener(this);
```

```java
        buttone = (Button) findViewById(R.id.button_e);buttonf = (Button)
findViewById(R.id.button_f);
        buttone.setOnClickListener(this);buttonf.setOnClickListener(this);
        buttong = (Button) findViewById(R.id.button_g);buttonh = (Button)
findViewById(R.id.button_h);
        buttong.setOnClickListener(this);buttonh.setOnClickListener(this);
        buttoni = (Button) findViewById(R.id.button_i);buttonj = (Button)
findViewById(R.id.button_j);
        buttoni.setOnClickListener(this);buttonj.setOnClickListener(this);
        buttonk = (Button) findViewById(R.id.button_k);buttonl = (Button)
findViewById(R.id.button_l);
        buttonk.setOnClickListener(this);buttonl.setOnClickListener(this);
        buttonm = (Button) findViewById(R.id.button_m);buttonn = (Button)
findViewById(R.id.button_n);
        buttonm.setOnClickListener(this);buttonn.setOnClickListener(this);
        buttono = (Button) findViewById(R.id.button_o);buttonp = (Button)
findViewById(R.id.button_p);
        buttono.setOnClickListener(this);buttonp.setOnClickListener(this);
        buttonq = (Button) findViewById(R.id.button_q);buttonr = (Button)
findViewById(R.id.button_r);
        buttonq.setOnClickListener(this);buttonr.setOnClickListener(this);
        buttons = (Button) findViewById(R.id.button_s);buttont = (Button)
findViewById(R.id.button_t);
        buttons.setOnClickListener(this);buttont.setOnClickListener(this);
        buttonu = (Button) findViewById(R.id.button_u);buttonv = (Button)
findViewById(R.id.button_v);
        buttonu.setOnClickListener(this);buttonv.setOnClickListener(this);
        buttonw = (Button) findViewById(R.id.button_w);buttonx = (Button)
findViewById(R.id.button_x);
        buttonw.setOnClickListener(this);buttonx.setOnClickListener(this);
        buttony = (Button) findViewById(R.id.button_y);buttonz = (Button)
findViewById(R.id.button_z);
        buttony.setOnClickListener(this);buttonz.setOnClickListener(this);

        keyValues.put(R.id.button_1, "1");
        keyValues.put(R.id.button_2, "2");
        keyValues.put(R.id.button_3, "3");
        keyValues.put(R.id.button_4, "4");
        keyValues.put(R.id.button_5, "5");
        keyValues.put(R.id.button_6, "6");
        keyValues.put(R.id.button_7, "7");
        keyValues.put(R.id.button_8, "8");
        keyValues.put(R.id.button_9, "9");
        keyValues.put(R.id.button_0, "0");
        keyValues.put(R.id.button_enter, "\n");

        keyValues.put(R.id.button_a, "a");keyValues.put(R.id.button_b, "b");
        keyValues.put(R.id.button_c, "c");keyValues.put(R.id.button_d, "d");
        keyValues.put(R.id.button_e, "e");keyValues.put(R.id.button_f, "f");
        keyValues.put(R.id.button_g, "g");keyValues.put(R.id.button_h, "h");
```

```java
        keyValues.put(R.id.button_i, "i");keyValues.put(R.id.button_j, "j");
        keyValues.put(R.id.button_k, "k");keyValues.put(R.id.button_l, "l");
        keyValues.put(R.id.button_m, "m");keyValues.put(R.id.button_n, "n");
        keyValues.put(R.id.button_o, "o");keyValues.put(R.id.button_p, "p");
        keyValues.put(R.id.button_q, "q");keyValues.put(R.id.button_r, "r");
        keyValues.put(R.id.button_s, "s");keyValues.put(R.id.button_t, "t");
        keyValues.put(R.id.button_u, "u");keyValues.put(R.id.button_v, "v");
        keyValues.put(R.id.button_w, "w");keyValues.put(R.id.button_x, "x");
        keyValues.put(R.id.button_y, "y");keyValues.put(R.id.button_z, "z");
    }

    @Override
    public void onClick(View view) {
        if (inputConnection == null)
            return;

        if (view.getId() == R.id.button_delete) {
            CharSequence selectedText = inputConnection.getSelectedText(0);

            if (TextUtils.isEmpty(selectedText)) {
                inputConnection.deleteSurroundingText(1, 0);
            } else {
                inputConnection.commitText("", 1);
            }
        } else {
            String value = keyValues.get(view.getId());
            inputConnection.commitText(value, 1);
        }
    }

    public void setInputConnection(InputConnection ic) {
        inputConnection = ic;
    }
}
```

Output :