

BITA-7-23-068-TZ

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Github link:

https://github.com/ASHANASSOR/MOBILE_DEVELOPMENT/tree/803d984acb715df834ab1c806a94ed560e817965/CALCULATOR%20APP

Question1: Installation of Android Studio and configuration, test case hello world.

Answer Codes:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

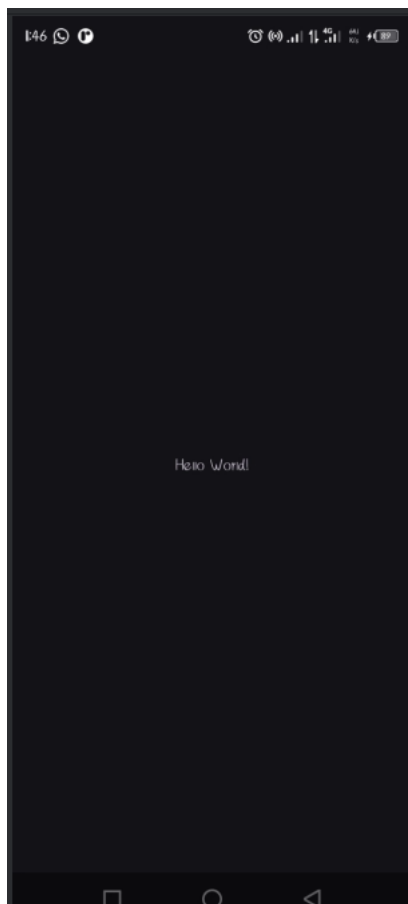
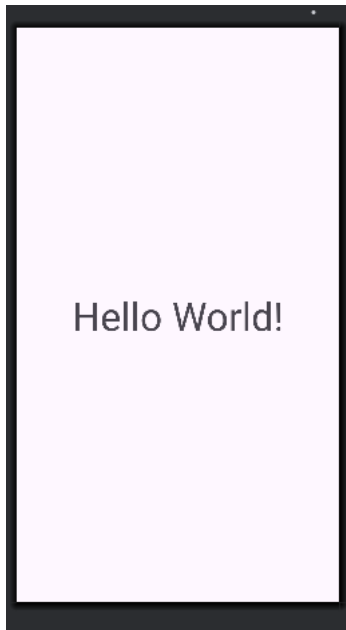
</androidx.constraintlayout.widget.ConstraintLayout>
package com.example.helloworldapp

import android.os.Bundle
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat

class MainActivity : AppCompatActivity() {
    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        enableEdgeToEdge()
        setContentView(R.layout.activity_main)
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main)) { v, insets -
>
        val systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars())
```

```
v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom)
insets
    }
}
```

Answer: Screenshot of outputs.



Question2: UI Design and Implementation Test Case Calculator.**Answer Codes:**

```

package com.example.calculatorapp

import android.os.Bundle
import android.widget.Button
import android.widget.TextView
import androidx.appcompat.app.AppCompatActivity

class MainActivity : AppCompatActivity() {

    private lateinit var txtResult: TextView
    private var result = 0
    private var inStr = "0"
    private var lastOperator = ''

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        txtResult = findViewById(R.id.txtResultId)
        txtResult.text = "0"

        val buttons = listOf(
            R.id.btnNum0Id, R.id.btnNum1Id, R.id.btnNum2Id, R.id.btnNum3Id, R.id.btnNum4Id,
            R.id.btnNum5Id, R.id.btnNum6Id, R.id.btnNum7Id, R.id.btnNum8Id, R.id.btnNum9Id,
            R.id.btnAddId, R.id.btnSubId, R.id.btnMulId, R.id.btnDivId,
            R.id.btnClearId, R.id.btnEqualId
        )

        val listener = ButtonClickListener()

        buttons.forEach {
            findViewById<Button>(it).setOnClickListener(listener)
        }
    }

    inner class ButtonClickListener : android.view.View.OnClickListener {
        override fun onClick(view: android.view.View) {
            val btn = view as Button
            when (view.id) {
                R.id.btnNum0Id, R.id.btnNum1Id, R.id.btnNum2Id, R.id.btnNum3Id,
                R.id.btnNum4Id, R.id.btnNum5Id, R.id.btnNum6Id,
                R.id.btnNum7Id, R.id.btnNum8Id, R.id.btnNum9Id -> {
                    val digit = btn.text.toString()
                    inStr = if (inStr == "0") digit else inStr + digit
                    txtResult.text = inStr
                    if (lastOperator == '=') {
                        result = 0
                    }
                }
            }
        }
    }
}

```

```

        lastOperator = ' '
    }
}

R.id.btnAddId -> {
    compute()
    lastOperator = '+'
}

R.id.btnSubId -> {
    compute()
    lastOperator = '-'
}

R.id.btnMulId -> {
    compute()
    lastOperator = '*'
}

R.id.btnDivId -> {
    compute()
    lastOperator = '/'
}

R.id.btnEqualId -> {
    compute()
    lastOperator = '='
}

R.id.btnClearId -> {
    result = 0
    inStr = "0"
    lastOperator = ' '
    txtResult.text = "0"
}
}

private fun compute() {
    val inNum = inStr.toInt()
    inStr = "0"
    result = when (lastOperator) {
        ' ' -> inNum
        '+' -> result + inNum
        '-' -> result - inNum
        '*' -> result * inNum
        '/' -> result / inNum
        '=' -> result
        else -> result
    }
}

```

```

        txtResult.text = result.toString()
    }
}
}

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

    <TextView
        android:id="@+id/txtResultId"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="#cccccc"
        android:gravity="end"
        android:padding="16dp"
        android:textSize="32sp"
        android:textColor="#000000"
        android:text="0" />

    <TableLayout
        android:id="@+id/tableId"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/txtResultId"
        android:stretchColumns="*">

        <TableRow>
            <Button android:id="@+id/btnNum7Id" android:text="7"/>
            <Button android:id="@+id/btnNum8Id" android:text="8"/>
            <Button android:id="@+id/btnNum9Id" android:text="9"/>
            <Button android:id="@+id/btnDivId" android:text="/" />
        </TableRow>

        <TableRow>
            <Button android:id="@+id/btnNum4Id" android:text="4"/>
            <Button android:id="@+id/btnNum5Id" android:text="5"/>
            <Button android:id="@+id/btnNum6Id" android:text="6"/>
            <Button android:id="@+id/btnMulId" android:text="*" />
        </TableRow>

        <TableRow>
            <Button android:id="@+id/btnNum1Id" android:text="1"/>
            <Button android:id="@+id/btnNum2Id" android:text="2"/>
            <Button android:id="@+id/btnNum3Id" android:text="3"/>
            <Button android:id="@+id/btnSubId" android:text="-" />
        </TableRow>
    </TableLayout>

```

```
<TableRow>
  <Button android:id="@+id/btnNum0Id" android:text="0"/>
  <Button android:id="@+id/btnClearId" android:text="C"/>
  <Button android:id="@+id/btnEqualId" android:text="="/>
  <Button android:id="@+id/btnAddId" android:text="+"/>
</TableRow>

</TableLayout>

</RelativeLayout>
```

Answer: Screenshot of output.

