Ex. No.	:	01	Date: 26-01-25
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GUI Components

Aim

Develop an application to change the font and color of the text and display toast message when the user presses the button.

Procedure:

Step 1 : File -> NewProject

Provide the application name and Click "Next"

Step 2 : Select the target android devices

Select the minimum SDK to run the application. Click "Next".

Step 3 : Choose the activity for the application (By default choose "Blank Activity).

Click "Next".

Step 4 : Enter activity name and click "Finish".

Step 5 : Edit the program.

Step 6 : Run the application, 2-ways to run the application.

1. Running through emulator

2. Running through mobile device

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">

    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true" android:theme="@style/Theme.Ex02"
        tools:targetApi="31">
        <activity
            android:name=".MainActivity"
            android:exported="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

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Activity_main.xml

```xml
<?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:id="@+id/textView"
        android:layout_width="196dp"
        android:layout_height="53dp"
        android:text="Hello World!"
        android:textSize="12dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.263"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.112" />

    <Button
        android:id="@+id/textcolor"
        android:layout_width="208dp"
        android:layout_height="70dp"
        android:text="Change text color"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.403"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.358" />

    <Button
        android:id="@+id/textsize"
        android:layout_width="208dp"
        android:layout_height="70dp"
        android:text="change text size "
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.403"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.499" />
```

```xml
<Button
    android:id="@+id/background"
    android:layout_width="208dp"
    android:layout_height="70dp"
    android:text="change background color"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.403"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.644" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

```kotlin
if (clickCounter > 30) {
        findViewById<ViewGroup>(R.id.main).setBackgroundColor(Color.WHITE) // or
originalBgColor if stored
        clickCounter = 0
      } else {
        val layout = findViewById<ViewGroup>(R.id.main)
        when (clickCounter) {
          10 -> layout.setBackgroundColor(Color.YELLOW)
          20 -> layout.setBackgroundColor(Color.MAGENTA)
          else -> layout.setBackgroundColor(Color.CYAN)
        }
        showToast("Background color changed successfully")
      }
    }
  }


}
```

MainActivity.kt

```kotlin
package com.example.guiapplication

import android.graphics.Color
import android.graphics.drawable.ColorDrawable
import android.os.Bundle
import android.util.TypedValue
import android.view.ViewGroup
import android.widget.Button
import android.widget.TextView
import android.widget.Toast
import androidx.activity.enableEdgeToEdge
import androidx.appcompat.app.AppCompatActivity
import androidx.core.view.ViewCompat
import androidx.core.view.WindowInsetsCompat

class MainActivity : AppCompatActivity() {

    private lateinit var textView: TextView
    private lateinit var textSizeButton: Button
    private lateinit var textColorButton: Button
    private lateinit var BgColorButton: Button

    private var originalTextSize = 0f
    private var originalTextColor = 0
    private lateinit var mainLayout: ViewGroup
    private var currentTextSize = 0f
    private var clickCounter = 0
    private var originalBgColor = 0

    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
        }
        fun showToast(message: String) {
            Toast.makeText(this, message, Toast.LENGTH_SHORT).show()
        }
```

```kotlin
mainLayout = findViewById(R.id.main)
    val background = mainLayout.background as? ColorDrawable
    originalBgColor = background?.color ?: Color.WHITE
    originalTextSize = textView.textSize
    originalTextColor = textView.currentTextColor
    currentTextSize = originalTextSize
    BgColorButton = findViewById(R.id.background)



    textSizeButton.setOnClickListener {
      clickCounter += 10

      if (clickCounter > 30) {
        currentTextSize = originalTextSize
        textView.setTextSize(TypedValue.COMPLEX_UNIT_PX, currentTextSize)
        clickCounter = 0
      } else {
        currentTextSize *= 2
        textView.setTextSize(TypedValue.COMPLEX_UNIT_PX, currentTextSize)
      }
      showToast("Text Size changed successfully")
    }

    // Change Text Color
    textColorButton.setOnClickListener {
      clickCounter += 10

      if (clickCounter > 30) {
        textView.setTextColor(originalTextColor)
        clickCounter = 0
      } else {
        // Set to any color you like (or cycle through a list)
        if (clickCounter == 10) {
          textView.setTextColor(Color.RED)
        } else if (clickCounter == 20) {
          textView.setTextColor(Color.BLUE)
        } else {
          textView.setTextColor(Color.GREEN) /// Orange
        }
        showToast("Text color changed successfully")
      }
    }
    //Backgroundcolor
    //Backgroundcolor
    BgColorButton.setOnClickListener {
      clickCounter += 10
```
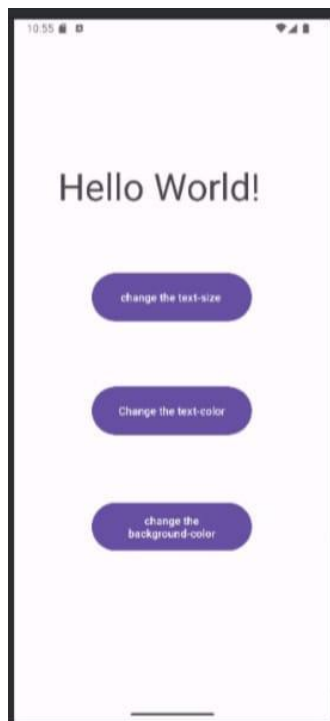
```kotlin
if (clickCounter > 30) {
        findViewById<ViewGroup>(R.id.main).setBackgroundColor(Color.WHITE) // or
originalBgColor if stored
        clickCounter = 0
    } else {
        val layout = findViewById<ViewGroup>(R.id.main)
        when (clickCounter) {
            10 -> layout.setBackgroundColor(Color.YELLOW)
            20 -> layout.setBackgroundColor(Color.MAGENTA)
            else -> layout.setBackgroundColor(Color.CYAN)
        }
        showToast("Background color changed successfully")
    }
  }
 }


}
```

Output

Result:

The experiment was conducted successfully.