

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 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>
```

Activity_main.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" />
```

```

<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>
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

```
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()
        }
    }
}
```

```

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

```

```
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

Hello World!

Change text color

change text size

change background
color



Background color changed successfully

Result:

The experiment was conducted successfully.