GUI Components

Aim

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

Procedure:

Step 1 : File → New Project

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

Design the UI in activity_main.xml and write Kotlin code in

MainActivity.kt

Step 6 : Run the application
Two 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.GUI"
        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
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/rootLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="16dp"
    android:background="#6200EA"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/appTitleTextView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Text Customization"
        android:textSize="24sp"
        android:textColor="#FFFFFF"
        android:textStyle="bold"
        android:gravity="center"
        android:layout_marginBottom="32dp"/>

    <TextView
        android:id="@+id/collegeNameTextView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Rajalakshmi Engineering College"
        android:textSize="20sp"
        android:textColor="#FFFFFF"
        android:gravity="center"
        android:padding="16dp"
        android:layout_marginBottom="32dp"/>
```

```xml
    <Button
        android:id="@+id/changeFontSizeButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Change Font Size"
        android:layout_marginBottom="16dp"
        android:backgroundTint="#8A2BE2"/>


    <Button
        android:id="@+id/changeFontColorButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Change Font Color"
        android:layout_marginBottom="16dp"
        android:backgroundTint="#8A2BE2"/>


    <Button
        android:id="@+id/changeBackgroundButton"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Change Background Color"
        android:layout_marginBottom="16dp"
        android:backgroundTint="#8A2BE2"/>


</LinearLayout>
```

MainActivity.kt

```kotlin
package com.example.gui

import android.graphics.Color

import android.graphics.Typeface

import android.os.Bundle

import android.view.View

import android.widget.Button

import android.widget.TextView

import android.widget.Toast

import android.appcompat.app.AppCompatActivity


class MainActivity : AppCompatActivity() {

    private lateinit var collegeNameTextView: TextView


    override fun onCreate(savedInstanceState: Bundle?) {

        super.onCreate(savedInstanceState)

        setContentView(R.layout.activity_main)


        collegeNameTextView = findViewById(R.id.collegeNameTextView)


        // Set initial values

        collegeNameTextView.text = "Rajalakshmi Engineering College"


        // Setup buttons

        setupChangeFontSizeButton()

        setupChangeFontColorButton()

        setupChangeBackgroundColorButton()

    }


    private fun setupChangeFontSizeButton() {
```

```kotlin
    val button = findViewById<Button>(R.id.changeFontSizeButton)

    val fontSizes = arrayOf(16f, 20f, 24f, 28f, 32f)

    var currentIndex = 0


    button.setOnClickListener {

        currentIndex = (currentIndex + 1) % fontSizes.size

        collegeNameTextView.textSize = fontSizes[currentIndex]

        showToast("Font size changed to ${fontSizes[currentIndex]}sp")

    }

}


private fun setupChangeFontColorButton() {

    val button = findViewById<Button>(R.id.changeFontColorButton)

    val colors = arrayOf(

        Color.BLACK,

        Color.RED,

        Color.BLUE,

        Color.GREEN,

        Color.MAGENTA

    )

    val colorNames = arrayOf("Black", "Red", "Blue", "Green", "Magenta")

    var currentIndex = 0


    button.setOnClickListener {

        currentIndex = (currentIndex + 1) % colors.size

        collegeNameTextView.setTextColor(colors[currentIndex])

        showToast("Text color changed to ${colorNames[currentIndex]}")

    }

}


private fun setupChangeBackgroundColorButton() {
```

```kotlin
val button = findViewById<Button>(R.id.changeBackgroundButton)

val colors = arrayOf(

    Color.WHITE,

    Color.LTGRAY,

    Color.CYAN,

    Color.YELLOW,

    Color.parseColor("#3F51B5") // Indigo

)

val colorNames = arrayOf("White", "Light Gray", "Cyan", "Yellow",
"Indigo")

var currentIndex = 0


// Get the root layout

val rootLayout = findViewById<View>(R.id.rootLayout)


button.setOnClickListener {

    currentIndex = (currentIndex + 1) % colors.size


    // Change the background color of the entire layout

    rootLayout.setBackgroundColor(colors[currentIndex])


    // Change text colors to ensure readability

    if (colors[currentIndex] == Color.YELLOW || colors[currentIndex] ==
Color.WHITE || colors[currentIndex] == Color.LTGRAY) {

        collegeNameTextView.setTextColor(Color.BLACK)

findViewById<TextView>(R.id.appTitleTextView).setTextColor(Color.BLACK)

    } else {

        collegeNameTextView.setTextColor(Color.WHITE)

findViewById<TextView>(R.id.appTitleTextView).setTextColor(Color.WHITE)

    }
```
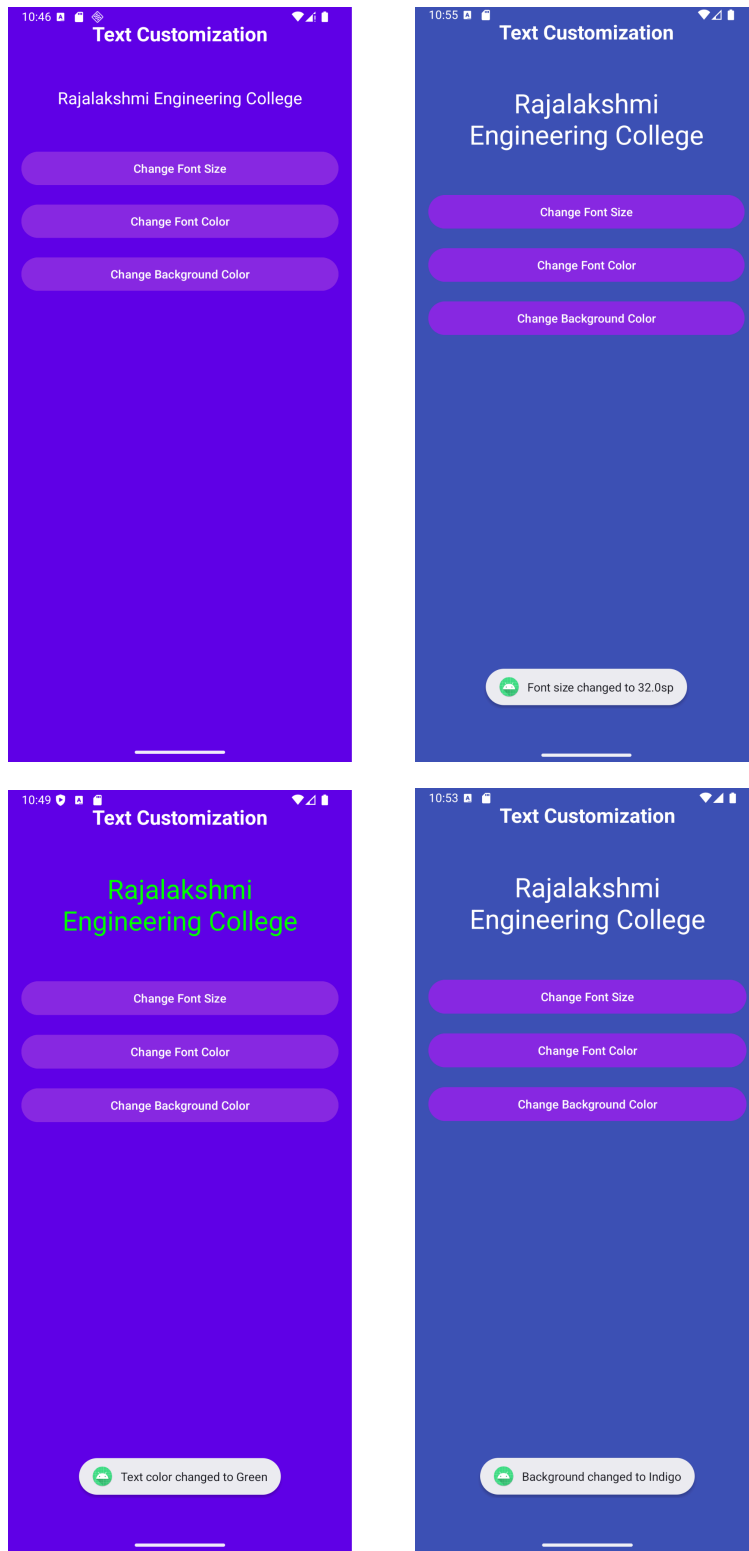
```kotlin
            showToast("Background changed to ${colorNames[currentIndex]}")

        }

    }


    private fun showToast(message: String) {

        Toast.makeText(this, message, Toast.LENGTH_SHORT).show()

    }

}
```

Output

Result:

The GUI application successfully displays a user interface and performs the intended functions when run on an emulator or mobile device.