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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:

1. Create a New Android Project

   o Open Android Studio.

   o Click on New Project → Select Empty Activity.

   o Enter the Application Name, Package Name, and select Kotlin as the language.

   o Click Finish.

2. Configure AndroidManifest.xml

   o Open AndroidManifest.xml.

   o Ensure that the MainActivity is declared.

   o Set the launcher intent so that the app starts with MainActivity.

3. Design the User Interface

   o Open activity_main.xml.

   o Use a LinearLayout with vertical orientation.

   o Add a TextView to display text.

   o Add three Buttons:

      ▪ Change Font Size

      ▪ Change Font Color

      ▪ Change Background Color

   o Assign proper IDs to all views.

4. Write Kotlin Code

   o Open MainActivity.kt.

   o Use setContentView() to load the layout.

- o Access UI elements using findViewById().
- o Implement setOnClickListener() for each button:
  - Font Size Button: Increases text size cyclically.
  - Font Color Button: Changes text color among predefined colors.
  - Background Color Button: Changes background color of the layout.

5. Run the Application
   - o Connect an Android Emulator or physical device.
   - o Click Run ▶ in Android Studio.
   - o Observe the changes when buttons are clicked.

6. Verify Output
   - o Text size changes on clicking Change Font Size.
   - o Text color changes on clicking Change Font Color.
   - o Background color changes on clicking Change BG Color.

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.Experiment1_MADD_46">
    <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: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"
    android:orientation="vertical"
    >

    <TextView
        android:id="@+id/tv"
        android:gravity="center"
        android:layout_width="match_parent"
        android:layout_height="232dp"
        android:text="Helloo“
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.273" />

    <Button
        android:id="@+id/btntxtsize"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Change Font Size"
        tools:layout_editor_absoluteX="149dp"
        tools:layout_editor_absoluteY="257dp" />

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

```
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Change Font Color"
            tools:layout_editor_absoluteX="129dp"
            tools:layout_editor_absoluteY="321dp" />

        <Button
            android:id="@+id/bgcolor"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Change BG Color"
            tools:layout_editor_absoluteX="149dp"
            tools:layout_editor_absoluteY="394dp" />

</LinearLayout>
```

MainActivity.kt

```
package com.example.experiment_1_madd_46

import android.os.Bundle
import android.widget.TextView
import android.widget.Button
import android.graphics.Color
import android.widget.LinearLayout
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)

        val main = findViewById<LinearLayout>(R.id.main)
        val tv = findViewById<TextView>(R.id.tv)
        val btntxtsize = findViewById<Button>(R.id.btntxtsize)
        val btntxtcolor = findViewById<Button>(R.id.btntxtcolor)
        val bgcolor = findViewById<Button>(R.id.bgcolor)
```

```
        var fontSize: Float = 10f
        btntxtsize.setOnClickListener {
            tv.setTextSize(fontSize)
            fontSize = ((fontSize+10)%50)
        }

        var fontColor: Int=5
        btntxtcolor.setOnClickListener {
            when(fontColor%5){
                0 -> tv.setTextColor(Color.RED)
                1 -> tv.setTextColor(Color.YELLOW)
                2 -> tv.setTextColor(Color.BLUE)
                3 -> tv.setTextColor(Color.GREEN)
                4 -> tv.setTextColor(Color.MAGENTA)
            }
            fontColor++
        }

        var bg: Int=5
        bgcolor.setOnClickListener {
            when(bg%5){
                1 -> main.setBackgroundColor(Color.RED)
                2 -> main.setBackgroundColor(Color.YELLOW)
                3 -> main.setBackgroundColor(Color.BLUE)
                4 -> main.setBackgroundColor(Color.GREEN)
                0 -> main.setBackgroundColor(Color.MAGENTA)
            }
            bg++
        }
    }
}
```
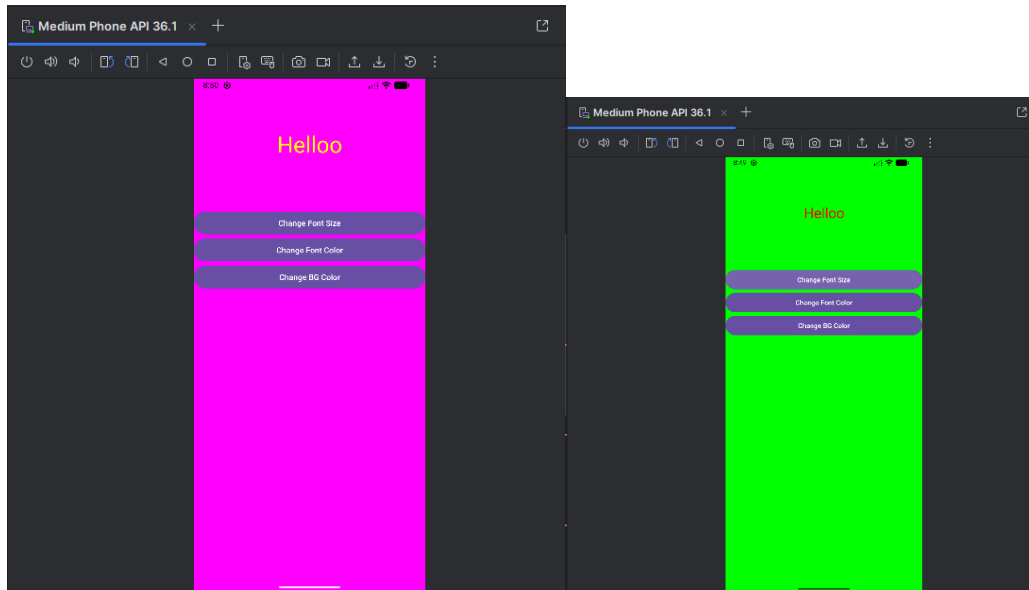
Output:

Result:

The Android application was successfully developed to dynamically change text size, text color, and background color using button click events.