

ASSIGNMENT 5

Android Application using Multithreading

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Learning Objective

Implement an Android application that uses Multi-threading.

Progress Bar

XML (activity_main.xml)

```
1 <?xml version="1.0" encoding="utf-8"?>
2 <LinearLayout
3     xmlns:android="http://schemas.android.com/apk/res/android"
4     xmlns:tools="http://schemas.android.com/tools"
5     android:layout_width="match_parent"
6     android:layout_height="match_parent"
7     tools:context=".MainActivity"
8     android:orientation="vertical"
9     android:gravity="center_horizontal">
10
11     <TextView
12         android:layout_width="match_parent"
13         android:layout_height="wrap_content"
14         android:text="Enter a time duration in seconds"
15         android:layout_margin="20dp"
16         android:fontFamily="@font/roboto_medium"
17         android:textSize="25sp"/>
18
19     <EditText
20         android:id="@+id/timeEditTxt"
21         android:layout_width="match_parent"
22         android:layout_height="wrap_content"
23         android:layout_marginStart="10dp"
```

```

24         android:layout_marginTop="10dp"
25         android:layout_marginEnd="10dp"
26         android:layout_marginBottom="10dp"
27         android:fontFamily="@font/roboto"
28         android:hint="Time (in seconds)"
29         android:inputType="number"
30         android:minHeight="48dp" />
31
32     <TextView
33         android:layout_width="match_parent"
34         android:layout_height="wrap_content"
35         android:text="Put the entire application into sleep for the
entered duration, while displaying a progress dialog"
36         android:layout_margin="20dp"
37         android:textSize="15sp"
38         android:fontFamily="@font/roboto"/>
39
40     <Button
41         android:id="@+id/sleepBtn"
42         android:layout_width="wrap_content"
43         android:layout_height="wrap_content"
44         android:fontFamily="@font/roboto_medium"
45         android:text="SLEEP" />
46
47     <TextView
48         android:layout_width="match_parent"
49         android:layout_height="wrap_content"
50         android:text="Start a parallel thread managing a progress bar for
the duration of time entered"
51         android:layout_margin="20dp"
52         android:textSize="15sp"
53         android:fontFamily="@font/roboto"/>
54
55     <ProgressBar
56         android:id="@+id/progressBar"
57         style="@style/Widget.AppCompat.ProgressBar.Horizontal"
58         android:layout_width="match_parent"
59         android:layout_height="wrap_content"
60         android:layout_marginLeft="10dp"
61         android:layout_marginRight="10dp"
62         android:layout_marginBottom="10dp"
63         android:progressDrawable="@drawable/custom_progress_bar"/>
64
65     <Button
66         android:id="@+id/startBtn"
67         android:layout_width="wrap_content"
68         android:layout_height="wrap_content"
69         android:fontFamily="@font/roboto_medium"
70         android:text="START" />
71
72 </LinearLayout>

```

Java (MainActivity.java)

```
1 package com.madlab.progressbar;
2
3 import androidx.annotation.RequiresApi;
4 import androidx.appcompat.app.AppCompatActivity;
5
6 import android.os.Build;
7 import android.os.Bundle;
8 import android.app.ProgressDialog;
9 import android.content.res.ColorStateList;
10 import android.graphics.Color;
11 import android.os.Handler;
12 import android.view.View;
13 import android.widget.Button;
14 import android.widget.EditText;
15 import android.widget.ProgressBar;
16
17 public class MainActivity extends AppCompatActivity {
18     ProgressBar progressBar;
19     Handler handler;
20
21     @Override
22     protected void onCreate(Bundle savedInstanceState) {
23         super.onCreate(savedInstanceState);
24         setContentView(R.layout.activity_main);
25
26         final EditText sleepTimeEditText = findViewById(R.id.timeEditTxt);
27         final Button bt_sleep=findViewById(R.id.sleepBtn);
28         final Button bt_start=findViewById(R.id.startBtn);
29
30         progressBar = findViewById(R.id.progressBar);
31         handler = new Handler();
32         bt_sleep.setOnClickListener(new View.OnClickListener() {
33             @RequiresApi(api = Build.VERSION_CODES.P)
34             @Override
35             public void onClick(View v) {
36                 final ProgressDialog progressDialog = new ProgressDialog(
37                     MainActivity.this);
38                 progressDialog.setTitle("Sleeping for " +
39                     sleepTimeEditText.getText().toString() + " seconds");
40                 progressDialog.setMessage("Sleeping");
41                 progressDialog.show();
42                 int count = Integer.parseInt(sleepTimeEditText.
43                     getText().toString());
44                 new Handler().postDelayed(new Runnable() {
45                     @Override
46                     public void run() {
47                         progressDialog.dismiss();
48                     }
49                 }, count * 1000);
50             }
51         });
52     }
53 }
```

```

47     }
48     });
49
50     bt_start.setOnClickListener(new View.OnClickListener() {
51         @Override
52         public void onClick(View v) {
53             new Thread(new Runnable() {
54                 @Override
55                 public void run() {
56                     int count = Integer.parseInt(sleepTimeEditText.
57 getEditableText().toString());
58                     for (int i = 0; i <= count; i++) {
59                         if (i == count) {
60                             handler.post(new Runnable() {
61                                 @Override
62                                 public void run() {
63                                     progressBar.setProgressTintList(
64 ColorStateList.valueOf(Color.GREEN));
65                                     bt_start.setText("FINISHED!");
66                                 }
67                             });
68                         }
69                         progressBar.setProgress((i*100)/count);
70                         try {
71                             Thread.sleep(1000);
72                         } catch (Exception e) {
73                             e.printStackTrace();
74                         }
75                     }
76                 }).start();
77             });
78         }
79     }

```

App Screenshots



