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Subject	:	UCS1711---Mobile Application Development Lab			

## QUESTION :

To develop an application which implements MULTI-THREADING and ALARM CLOCK

## CODE :

### MULTI-THREADING

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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:background="#daf5f7">

    <ProgressBar
        android:id="@+id/progressBar"
        style="?android:attr/progressBarStyleHorizontal"
        android:layout_width="365dp"
        android:layout_height="31dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.608"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.302" />

    <Button
        android:id="@+id/button"
        style="@style/Widget.AppCompat.Button"
```

```

        android:layout_width="290dp"
        android:layout_height="50dp"
        android:text="@string/start"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.495"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.179" />

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="28dp"
    android:layout_marginTop="412dp"
    android:text="@string/sleep_for"
    android:textSize="22sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />

<EditText
    android:id="@+id/seconds"
    android:layout_width="88dp"
    android:layout_height="39dp"
    android:layout_marginStart="7dp"
    android:textAlignment="center"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="@+id/textView"
    app:layout_constraintStart_toEndOf="@+id/textView"
    app:layout_constraintTop_toTopOf="@+id/textView"
    app:layout_constraintVertical_bias="0.0" />

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="8dp"
    android:text="@string/seconds"
    android:textSize="22sp"
    app:layout_constraintBottom_toBottomOf="@+id/seconds"
    app:layout_constraintStart_toEndOf="@+id/seconds"
    app:layout_constraintTop_toTopOf="@+id/seconds"
    app:layout_constraintVertical_bias="0.0" />

<Button
    android:id="@+id/button2"
    android:layout_width="290dp"
    android:layout_height="50dp"
    android:layout_marginTop="11dp"
    android:text="@string/sleep"
    app:layout_constraintBottom_toBottomOf="parent"

```

```

        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.495"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button"
        app:layout_constraintVertical_bias="0.654" />

</androidx.constraintlayout.widget.ConstraintLayout>

```

## custom\_dialog.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:layout_width="match_parent"
    android:layout_height="wrap_content">

    <TextView
        android:id="@+id/textView3"
        android:layout_width="194dp"
        android:layout_height="42dp"
        android:text="        Sleeping..."
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.532"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="1.0" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

## Strings.xml :

```

<resources>
    <string name="app_name">Ex5 Multithreading</string>
    <string name="look_down">Look Down</string>
    <string name="next_activity">Next Activity</string>
    <string name="start">Start</string>
    <string name="seconds">Seconds</string>
    <string name="sleep">Sleep</string>
    <string name="sleep_for">Time to sleep: </string>
</resources>

```

## MainActivity.java :

```
package com.example.v1;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.content.res.ColorStateList;
import android.graphics.Color;
import android.os.Bundle;
import android.os.Handler;
import android.os.SystemClock;
import android.view.View;
import android.widget.Button;
import android.widget.ProgressBar;
import android.widget.TextView;
import android.widget.Toast;

import java.util.Timer;
import java.util.TimerTask;

public class MainActivity extends AppCompatActivity {

    private ProgressBar progressBar;
    private Button start;
    private Button next;
    private Handler mainHandler=new Handler();

    private TextView seconds;
    private Button sleep;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        progressBar=findViewById(R.id.progressBar);
        start=findViewById(R.id.button);
        //next=findViewById(R.id.button2);

        start.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                toastMessage("Process started...");
                new Thread(new Runnable() {
                    @Override
```

```

        public void run() {
            for(int i=0;i<=100;i++){
                int finalI = i;
                mainHandler.post(new Runnable() {
                    @Override
                    public void run() {
                        progressBar.setProgress(finalI);

if(finalI<=33)progressBar.setProgressTintList(ColorStateList.valueOf(Color.BLUE));

                                if(finalI>33 &&
finalI<66)progressBar.setProgressTintList(ColorStateList.valueOf(Color.YELLOW));

if(finalI>=66)progressBar.setProgressTintList(ColorStateList.valueOf(Color.RED));

                                if(finalI==99);
                                }
                            });
                        try {
                            Thread.sleep(100);
                        } catch (InterruptedException e) {
                            e.printStackTrace();
                        }
                    }
                })
            }).start();
        }
    });

    seconds=findViewById(R.id.seconds);
    sleep=findViewById(R.id.button2);
    LoadDialog loadDialog=new LoadDialog(MainActivity.this);

    sleep.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            try {

loadDialog.openDialog(Integer.parseInt(String.valueOf(seconds.getText())));
                }
                catch (NumberFormatException e){
                    System.out.println(e);
                    toastMessage("Seconds cannot be empty!");
                }
            }
        });

    }

    private void toastMessage(String message){

```

```
Toast.makeText(getApplicationContext(),message,Toast.LENGTH_SHORT).show();
}}
```

## LoadActivity.java :

```
package com.example.v1;

import android.app.Activity;
import android.app.AlertDialog;
import android.content.Context;
import android.view.LayoutInflater;
import android.widget.ProgressBar;
import android.widget.Toast;

import java.util.logging.Handler;

public class LoadDialog {
    Activity activity;
    AlertDialog dialog;
    int seconds;

    LoadDialog(Activity activity){
        this.activity=activity;
    }

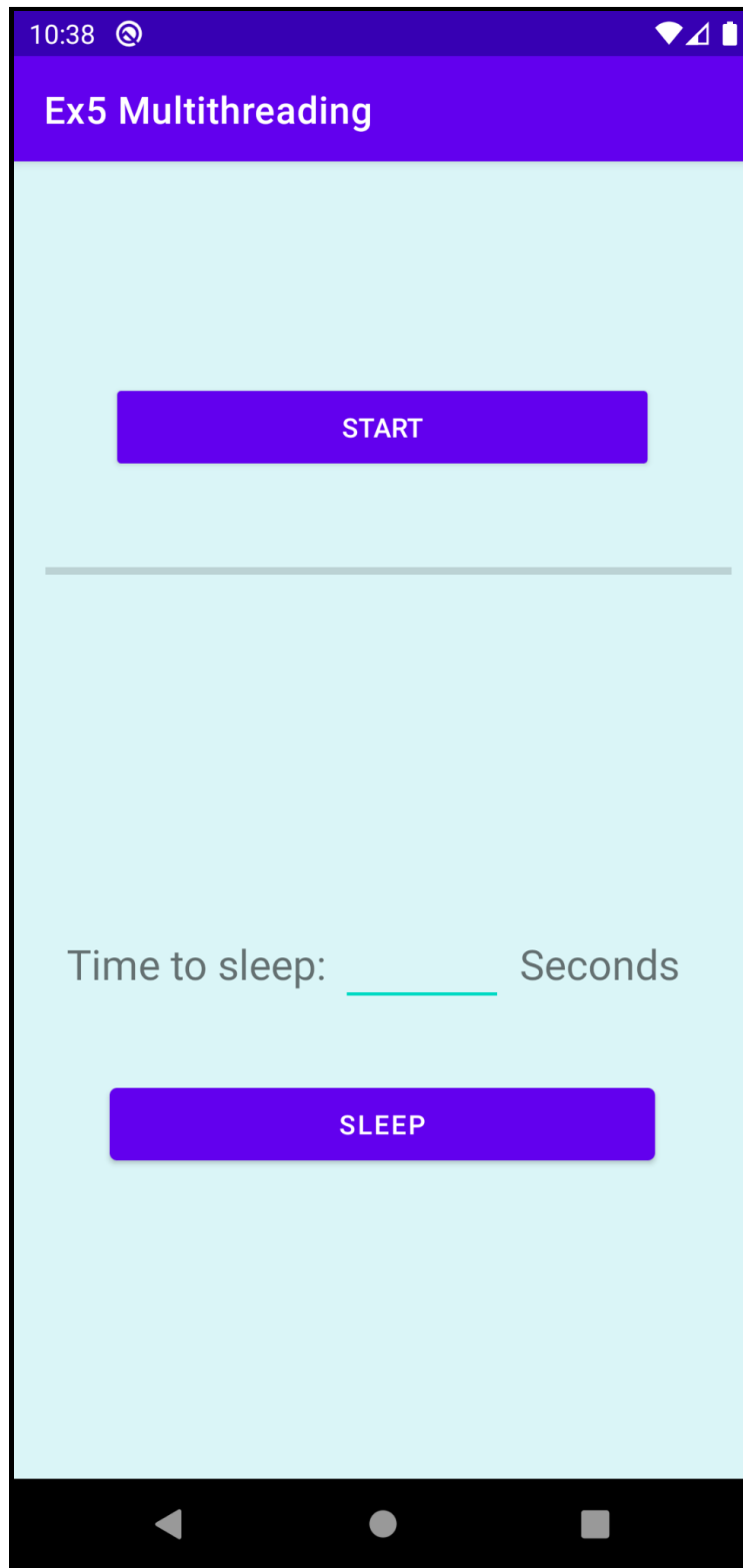
    void openDialog(int seconds){
        AlertDialog.Builder builder=new AlertDialog.Builder(activity);

        LayoutInflater inflater=activity.getLayoutInflater();
        builder.setView(inflater.inflate(R.layout.custom_dialog,null));
        builder.setCancelable(false);

        dialog=builder.create();
        dialog.show();
        new Thread(new Runnable() {
            @Override
            public void run() {
                try {
                    Thread.sleep(seconds*1000);
                } catch (InterruptedException e) {
                    e.printStackTrace();
                }
                closeDialog();
            }
        }).start();
    }

    void closeDialog(){
        dialog.dismiss();
    }
}
```

## Output Snapshot:



10:38



## Ex5 Multithreading

START



Time to sleep: 7 Seconds

SLEEP

Process started...

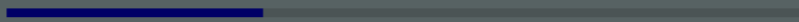


10:38



## Ex5 Multithreading

START



Sleeping...

Time to sleep: 7 Seconds

SLEEP

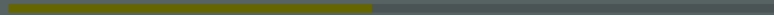


10:38



## Ex5 Multithreading

START



Sleeping...

Time to sleep: 7 Seconds

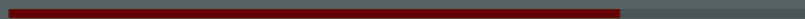
SLEEP

10:38



## Ex5 Multithreading

START



Sleeping...

Time to sleep: 7 Seconds

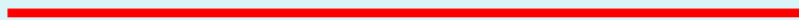
SLEEP

10:38



## Ex5 Multithreading

START



Time to sleep: 7 Seconds

SLEEP

# ALARM CLOCK

activity\_main.xml :

```
<?xml version="1.0" encoding="utf-8"?>

<RelativeLayout
    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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TimePicker
        android:id="@+id/alarmtime"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentStart="true"
        android:layout_alignParentTop="true"
        android:layout_marginTop="162dp"
        android:layout_alignParentLeft="true" />

</RelativeLayout>
```

Alarm.java:

```
package com.example.v4;

import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;

import androidx.core.app.NotificationCompat;

public class Alarm extends BroadcastReceiver {

    @Override
```

```

    public void onReceive(Context context, Intent intent) {
        Uri uri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
        Ringtone ringtone = RingtoneManager.getRingtone(context, uri);
        ringtone.play();

        PendingIntent pd = PendingIntent.getActivity(context, 0, intent, 0);
        NotificationCompat.Builder builder = new
NotificationCompat.Builder(context, "Wake up");

        builder.setSmallIcon(R.mipmap.ic_launcher_round);
        builder.setContentIntent(pd);
        builder.setContentTitle("Alarm");
        builder.setContentText("Time up");

        NotificationManager notifmgr =
(NotificationManager) context.getSystemService(Context.NOTIFICATION_SERVICE);
        notifmgr.notify(1, builder.build());
    }
}

```

## MainActivity.java :

```

package com.example.v4;

import androidx.annotation.RequiresApi;
import androidx.appcompat.app.AppCompatActivity;

import android.app.AlarmManager;
import android.app.PendingIntent;
import android.app.TimePickerDialog;
import android.content.Intent;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {

    Calendar calendar;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        final TimePicker alarm_time = findViewById(R.id.alarmtime);
    }
}

```

```

        final AlarmManager alarmMgr =
(AlarmManager) getSystemService(ALARM_SERVICE);
        final Intent I = new Intent(getApplicationContext(), Alarm.class);

        final PendingIntent pd =
PendingIntent.getBroadcast(getApplicationContext(), 0, I, 0);

        calendar = Calendar.getInstance();
        alarm_time.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                new TimePickerDialog(MainActivity.this, new
TimePickerDialog.OnTimeSetListener() {
                    @RequiresApi(api = Build.VERSION_CODES.KITKAT)
                    @Override

                    public void onTimeSet(TimePicker view, int hourOfDay, int
minute) {

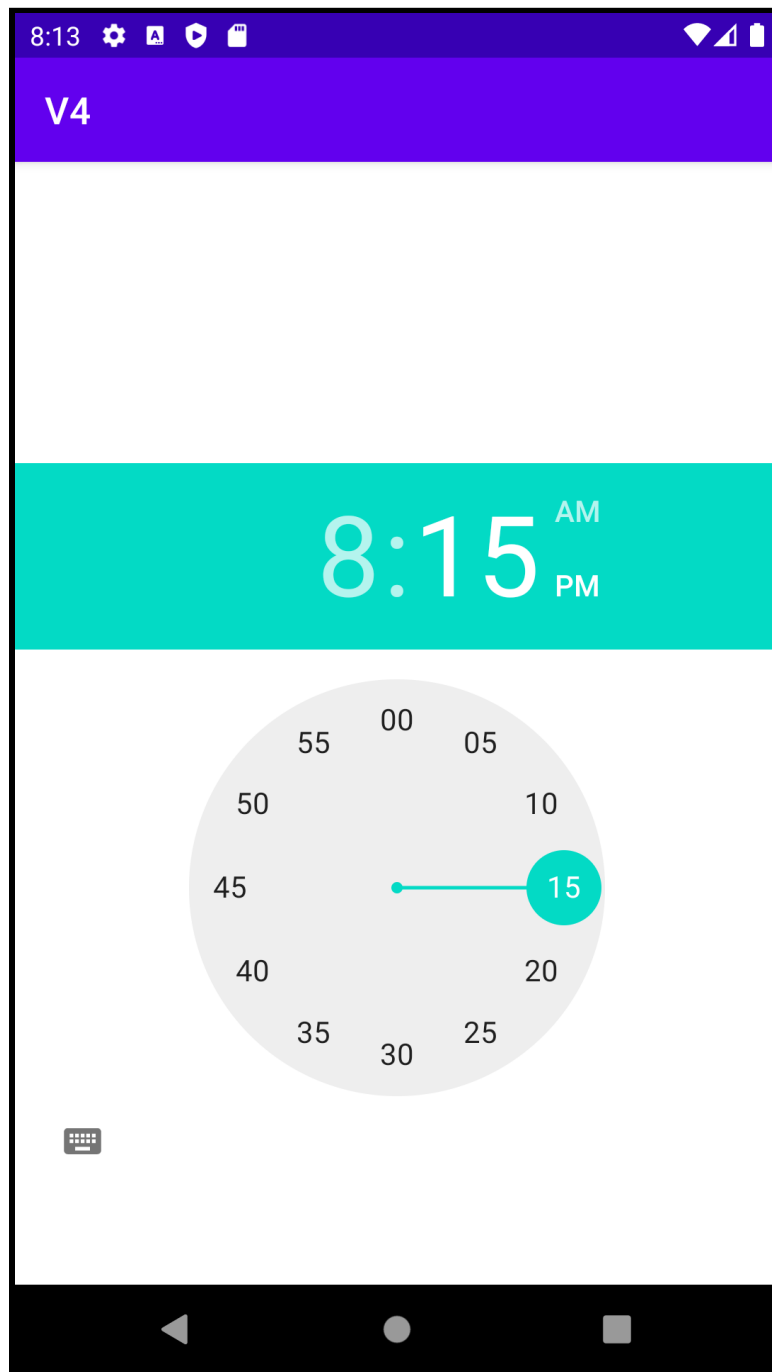
                        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
                            alarm_time.setHour(hourOfDay);
                        }
                        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.M) {
                            alarm_time.setMinute(minute);
                        }

                        calendar.set(Calendar.HOUR_OF_DAY,
alarm_time.getCurrentHour());
                        calendar.set(Calendar.MINUTE,
alarm_time.getCurrentMinute());

                        alarmMgr.setExact(AlarmManager.RTC_WAKEUP,
calendar.getTimeInMillis(), pd);
                        Toast.makeText(MainActivity.this, "Alarm set",
Toast.LENGTH_SHORT).show();
                    }
                }, calendar.get(Calendar.HOUR_OF_DAY),
calendar.get(Calendar.MINUTE), false).show();
            }
        });
    }
}

```

## OUTPUT SNAPSHOTS :



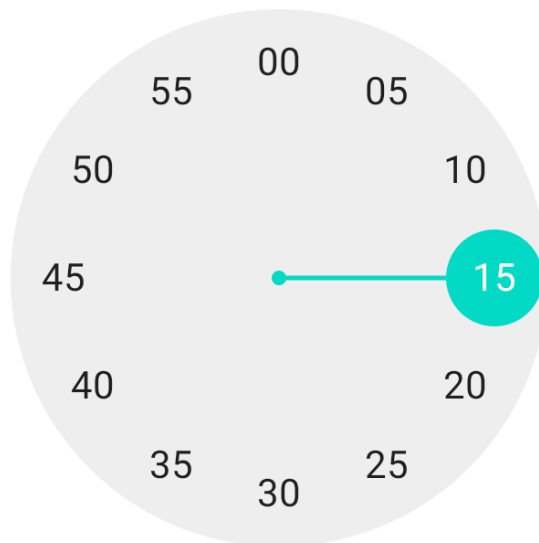


8:13



V4

8:15<sup>AM</sup>  
PM



CANCEL

OK

Type

8

hour



V4

## Set time

Type in time

8 : 15

hour minute

PM ▼



Alarm set