Experiment-9

Aim: Design a StopWatch application

Procedure:

Creating a New project:

- Open Android Studio and then click on File -> New -> New project.
- Then select the Empty Activity and click Next.
- Then type the Application name as "stopwatch", select the Minimum SDK and select language as Java then click Finish

Designing layout for the Android Application:

- Click on app -> res -> layout -> activity_main.xml and write the following code

Code for 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">

   <TextView

      android:layout_width="wrap_content"

      android:layout_height="wrap_content"

      android:text="Hello World!"

      android:id="@+id/tv1"

      android:layout_marginTop="50dp"

      android:layout_marginLeft="150dp"

      android:gravity="center"
```

```
    android:textSize="30sp"/>

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/b1"
    android:text="START"
    android:layout_marginTop="200dp"
    android:layout_marginLeft="150dp"
    android:onClick="onClickStart"/>


<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/b2"
    android:text="STOP"
    android:layout_marginTop="300dp"
    android:layout_marginLeft="150dp"
    android:onClick="onClickStop"/>

<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/b3"
    android:text="RESET"
    android:layout_marginTop="400dp"
    android:layout_marginLeft="150dp"
```

```
    android:onClick="onClickReset"/>

</RelativeLayout>
```

So now the designing part is completed.

Java Coding for the Android Application:

Click on app -> java -> com.garima.stopwatch -> MainActivity.

Code for MainActivity.java:

```
package com.garima.stopwatch;

import androidx.appcompat.app.AppCompatActivity;



import android.os.Bundle;

import android.os.Handler;

import android.view.View;

import android.widget.TextView;



public class MainActivity extends AppCompatActivity {

   private int seconds=0;

   boolean running,wasRunning;

   TextView txtv;

   Handler hl;



   @Override

   protected void onCreate(Bundle savedInstanceState) {

      super.onCreate(savedInstanceState);
```

```
setContentView(R.layout.activity_main);

if(savedInstanceState!=null)
```

```
    {

        seconds=savedInstanceState.getInt("seconds");
        running=savedInstanceState.getBoolean("running");
        wasRunning=savedInstanceState.getBoolean("wasRunning");
    }
    runTimer();
}
protected void onPause() {

    super.onPause();
    wasRunning=running;
    running=false;
}

protected void onResume()
{
    super.onResume();
    if(wasRunning)
        running=true;

}
@Override
```

```
public void onSaveInstanceState(Bundle savedInstancestate)

{

    savedInstancestate.putInt("seconds",seconds);
```

```
    savedInstancestate.putBoolean("running",running);
    savedInstancestate.putBoolean("wasRunning",wasRunning);
}
public void onClickStart(View v)
{
    running=true;
}
public void onClickStop(View v)
{
    running=false;
}
public void onClickReset(View v)
{
    running=false;
    seconds=0;
}
private void runTimer() {
    txtv=(TextView)findViewById(R.id.tv1);
    hl=new Handler();
    hl.post(new Runnable() {
        @Override
```

```
public void run() {

    int hours=seconds/3600;

    int minutes=(seconds%3600)/60;

    int secs=seconds%60;
```

```
                String
                time=String.format("%d:%02d:%02d",hours,minutes,secs);
                txtv.setText(time);
                if(running)
                {
                   seconds++;
                }
               hl.postDelayed(this,100) ;
            }
        });
    }
}
```

OUTPUT