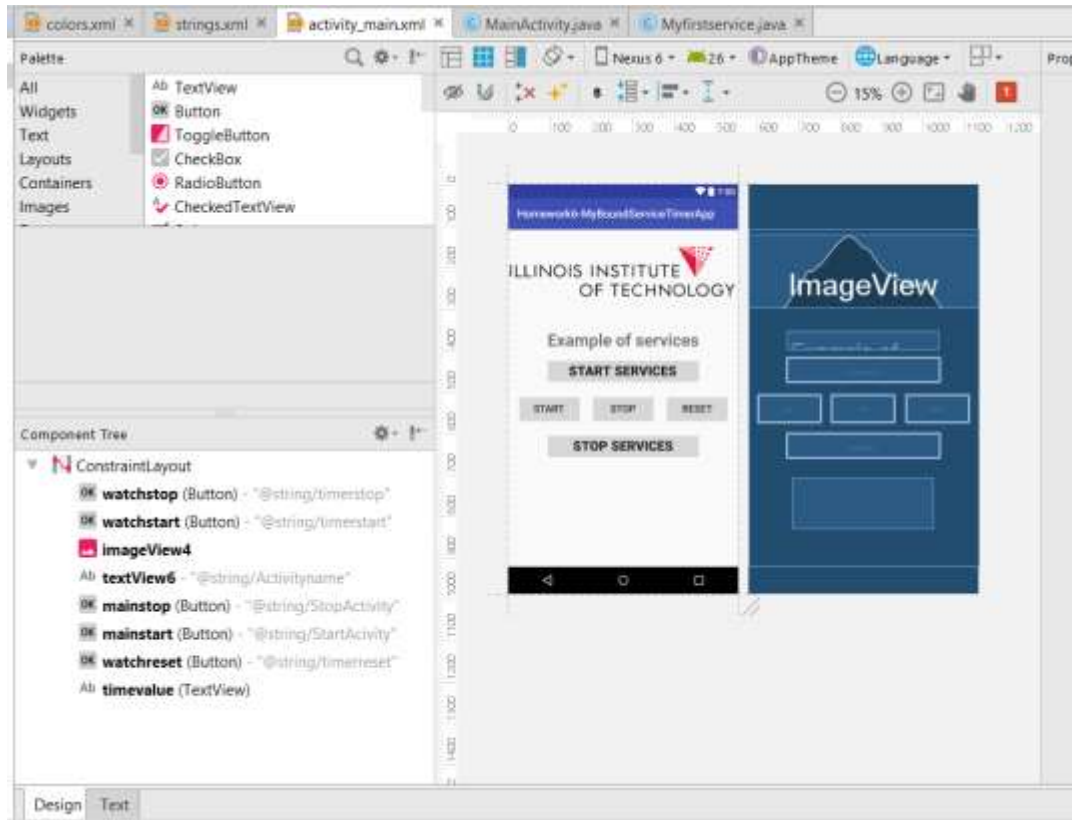ITMD455/555/855 Android App Development

HW6 Due date: Before class on 10/30/2017.

Please send one Word or PDF file that contains the necessary XML files, Java code and screenshots to phuang9@iit.edu Please create an App that uses Bound Service to simulate a Stop Watch.

1. Button "Start Services" is used to start the background services.
2. Button "Stop Services" is used to stop the background services.
3. Button "Start" is used to start the stop watch.
4. Button "stop" is used to stop the stop watch.
5. Button "Reset" is used to reset the stop watch.

Solution:

Layout

Activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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="com.example.vasugupta.homework6_myboundservicetimerapp.MainActivity
">

    <Button
        android:id="@+id/watchstop"
        android:layout_width="115dp"
        android:layout_height="53dp"
        android:layout_marginBottom="64dp"
        android:layout_marginTop="65dp"
        android:onClick="ClickStop"
        android:text="@string/timerstop"
        android:textSize="18sp"
        app:layout_constraintBottom_toBottomOf="@+id/mainstop"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="@+id/mainstart"
        tools:layout_constraintBottom_creator="1"
        tools:layout_constraintLeft_creator="1"
        tools:layout_constraintRight_creator="1"
        tools:layout_constraintTop_creator="1" />

    <Button
        android:id="@+id/watchstart"
        android:layout_width="0dp"
        android:layout_height="53dp"
        android:text="@string/timerstart"
        android:textSize="18sp"
        app:layout_constraintRight_toLeftOf="@+id/watchstop"
        tools:layout_constraintRight_creator="1"
        android:layout_marginStart="16dp"
        android:layout_marginEnd="17dp"
        app:layout_constraintBaseline_toBaselineOf="@+id/watchstop"
        tools:layout_constraintBaseline_creator="1"
        tools:layout_constraintLeft_creator="1"
        app:layout_constraintLeft_toLeftOf="parent" />

    <ImageView
        android:id="@+id/imageView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:srcCompat="@drawable/illinoistech"
        tools:layout_constraintTop_creator="1"
        android:layout_marginTop="8dp"
        tools:layout_constraintLeft_creator="1"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView6"
        android:layout_width="0dp"
```

```xml
        android:layout_height="35dp"
        android:text="@string/Activityname"
        android:textSize="30sp"
        android:textStyle="bold"
        tools:layout_constraintRight_creator="1"
        tools:layout_constraintBottom_creator="1"
        app:layout_constraintBottom_toTopOf="@+id/mainstart"
        android:layout_marginStart="70dp"
        android:layout_marginEnd="70dp"
        app:layout_constraintRight_toRightOf="parent"
        tools:layout_constraintLeft_creator="1"
        android:layout_marginBottom="13dp"
        app:layout_constraintLeft_toLeftOf="parent" />

    <Button
        android:id="@+id/mainstop"
        android:layout_width="0dp"
        android:layout_height="48dp"
        android:text="@string/StopActivity"
        android:textSize="24sp"
        android:textStyle="bold"
        tools:layout_constraintRight_creator="1"
        tools:layout_constraintBottom_creator="1"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintRight_toRightOf="@+id/mainstart"
        tools:layout_constraintLeft_creator="1"
        android:layout_marginBottom="192dp"
        app:layout_constraintLeft_toLeftOf="@+id/mainstart" />

    <Button
        android:id="@+id/mainstart"
        android:layout_width="0dp"
        android:layout_height="48dp"
        android:elevation="3dp"
        android:text="@string/StartAcivity"
        android:textSize="24sp"
        android:textStyle="bold"
        tools:layout_constraintRight_creator="1"
        tools:layout_constraintBottom_creator="1"
        app:layout_constraintBottom_toTopOf="@+id/mainstop"
        android:layout_marginStart="67dp"
        android:layout_marginEnd="67dp"
        app:layout_constraintRight_toRightOf="parent"
        tools:layout_constraintLeft_creator="1"
        android:layout_marginBottom="86dp"
        app:layout_constraintLeft_toLeftOf="parent" />

    <Button
        android:id="@+id/watchreset"
        android:layout_width="0dp"
        android:layout_height="53dp"
        android:layout_marginEnd="16dp"
        android:layout_marginStart="17dp"
        android:text="@string/timerreset"
        android:textSize="18sp"
        app:layout_constraintBaseline_toBaselineOf="@+id/watchstop"
        app:layout_constraintLeft_toRightOf="@+id/watchstop"
        app:layout_constraintRight_toRightOf="parent"
        tools:layout_constraintBaseline_creator="1"
        tools:layout_constraintLeft_creator="1"
```

```xml
            tools:layout_constraintRight_creator="1" />

    <TextView
        android:id="@+id/timevalue"
        android:layout_width="253dp"
        android:layout_height="92dp"
        android:layout_marginBottom="98dp"
        android:layout_marginTop="97dp"
        android:textAlignment="center"
        android:textColor="@color/timercolor"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/watchstart"
        tools:layout_constraintBottom_creator="1"
        tools:layout_constraintLeft_creator="1"
        tools:layout_constraintRight_creator="1"
        tools:layout_constraintTop_creator="1"
        app:layout_constraintVertical_bias="0.0" />

</android.support.constraint.ConstraintLayout>
```

Myfirstservice.java

```java
package com.example.vasugupta.homework6_myboundservicetimerapp;

import android.app.Service;
import android.content.Intent;
import android.os.Handler;
import android.os.IBinder;
import android.widget.Toast;

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

public class Myfirstservice extends Service {
    int counter=0;
    Timer timer = new Timer();
    TimerTask timerTask;
    final Handler handler = new Handler();

    @Override
    public void onCreate() {
    }
    @Override
    public IBinder onBind(Intent arg0) {
        return null;
    }
    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        // Let it continue running until it is stopped.
        final Handler handler = new Handler();
    //    final Timer timer = new Timer();
        timerTask = new TimerTask() {
            @Override
```

```java
        public void run() {
            handler.post(new Runnable() {
                public void run() {
                    ++counter;
                    Toast.makeText(getApplicationContext(),
                            "Counter=:"+counter, Toast.LENGTH_SHORT).show();
                    // Log.d("test", "run: ------> "+counter);
                }
            });
        };
    };
    timer.schedule(timerTask, 1000, 3000);
    Toast.makeText(this, "Service Started", Toast.LENGTH_LONG).show();
    return START_STICKY;
}
@Override public void onDestroy() {
    super.onDestroy();
    timerTask.cancel();
    timer.cancel();
    Toast.makeText(this, "Service Destroyed", Toast.LENGTH_LONG).show();
}
}
```

MainActivity.java

```java
package com.example.vasugupta.homework6_myboundservicetimerapp;

import android.content.Intent;
import android.os.Bundle;
import android.os.Handler;
import android.os.SystemClock;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    Button strservbtn, stpservbtn, tstartbtn, tstopbtn, tresetbtn;
    TextView tvalue;

    long MillisecondTime, StartTime, TimeBuff, UpdateTime = 0L ;

    Handler handler;

    int Seconds, Minutes, MilliSeconds ;
    Runnable runnable = new Runnable() {
        public void run() {
            MillisecondTime = SystemClock.uptimeMillis() - StartTime;
            UpdateTime = TimeBuff + MillisecondTime;
            Seconds = (int) (UpdateTime / 1000);
            Minutes = Seconds / 60;
            Seconds = Seconds % 60;
            MilliSeconds = (int) (UpdateTime % 1000);
            tvalue.setText("" + Minutes + ":"
                    + String.format("%02d", Seconds) + ":"
```

```java
                        + String.format("%03d", MilliSeconds));
                handler.postDelayed(this, 0);
            }
        };
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        strservbtn = (Button) findViewById(R.id.mainstart);
        stpservbtn = (Button) findViewById(R.id.mainstop);
        tstartbtn = (Button) findViewById(R.id.watchstart);
        tresetbtn = (Button) findViewById(R.id.watchreset);
        tstopbtn = (Button) findViewById(R.id.watchstop);
        tvalue = (TextView) findViewById(R.id.timevalue);
        handler = new Handler() ;
        tstartbtn.setEnabled(false);
        tstopbtn.setEnabled(false);
        tresetbtn.setEnabled(false);

        strservbtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                    startService(new Intent(getBaseContext(),
Myfirstservice.class));
                    tvalue.setVisibility(View.VISIBLE);

                // 		Myfirstservice helloService = new Myfirstservice();
                tstartbtn.setEnabled(true);
                tstopbtn.setEnabled(true);

                // Toast.makeText(getApplicationContext(),"Start server btn",
Toast.LENGTH_SHORT).show();
                }});
        stpservbtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                stopService(new Intent(getBaseContext(), Myfirstservice.class));

                // Toast.makeText(getApplicationContext(),"Stop server btn",
Toast.LENGTH_SHORT).show();
                    tstartbtn.setEnabled(false);
                    tstopbtn.setEnabled(false);
                    tresetbtn.setEnabled(false);
                    tvalue.setVisibility(View.INVISIBLE);
            }
        });
        tstartbtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                StartTime = SystemClock.uptimeMillis();
                handler.postDelayed(runnable, 0);
                tresetbtn.setEnabled(false);
                // Toast.makeText(getApplicationContext(),"Clock Start",
Toast.LENGTH_SHORT).show();
                }});
        tstopbtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                TimeBuff += MillisecondTime;
                handler.removeCallbacks(runnable);
```

```java
            tresetbtn.setEnabled(true);
    //      Toast.makeText(getApplicationContext(),"Clock Stop",
Toast.LENGTH_SHORT).show();
        }});
      tresetbtn.setOnClickListener(new View.OnClickListener() {
          @Override
          public void onClick(View v) {
              MillisecondTime = 0L ;
              StartTime = 0L ;
              TimeBuff = 0L ;
              UpdateTime = 0L ;
              Seconds = 0 ;
              Minutes = 0 ;
              MilliSeconds = 0 ;
              tvalue.setText("00:00:00");
          // Toast.makeText(getApplicationContext(),"Clock reset",
Toast.LENGTH_SHORT).show();
          }});}}
```

Working Screenshots

Service Start

Timer Start

Timer Stop

Timer Reset

Service Stop