ECE590- Mobile Systems and Applications

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Lab-3

Introduction

In this lab, I have developed an application which displays the current time and updates the time at every 5 seconds. The lab stated to use Service + Broadcast or Service + Activity to implement the timer.

Description & Discussion

One ay communication is established in this lab between the activity and the service and that was too from the service side. The workflow is discussed in the steps given below:

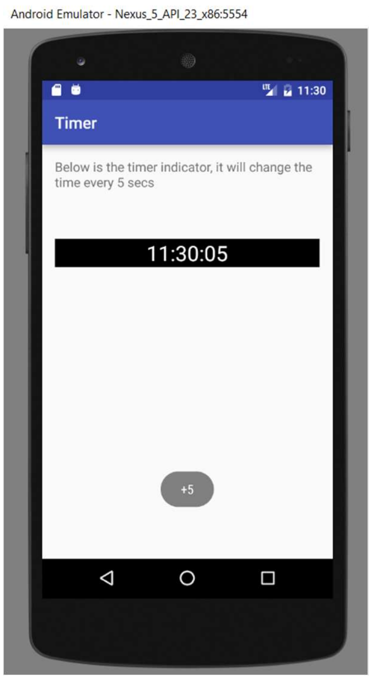
1. The main activity initiates the service and then waits for any broadcast from the service
2. As soon as the service is started it checks for any present call back and flushes them
3. Gets initiated with no delay as the provided delay is zero.
4. To keep the service running in background even if app is closed , Start_sticky was used and to add a delay of 5 secs runnable was used.
5. With every 5 seconds a pop message was displayed with "+5" message to indicated 5 seconds has been passed. And for that toast function is used.
6. Current date is obtained and broadcasted to the listeners every 5 seconds.
7. The listener in the main receives the broadcasted time and stores it.
8. The stored time is then updated on the TextView every 5 seonds.

The output 1 shows the time and flash message and the output 2 shows static time when it is not updated and output 3 shows the updated time with the pop up message.

Conclusion

As per the lab requirements application was developed which updates the timer after every 5 sec and displays it. This Lab helped to understand the service activity communication and how a service works in the background.

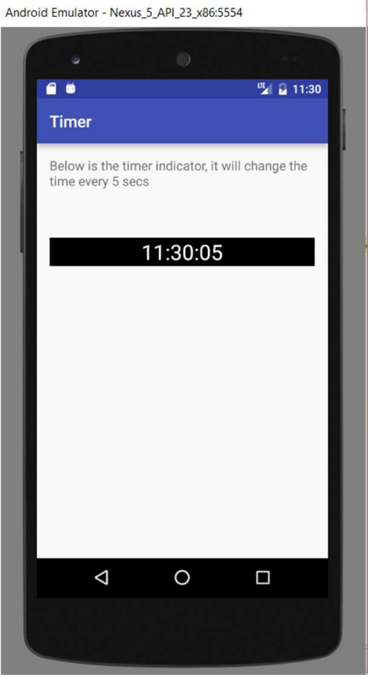
Output



Android Emulator - Nexus_5_API_23_x86:5554

Below is the timer indicator, it will change the time every 5 secs

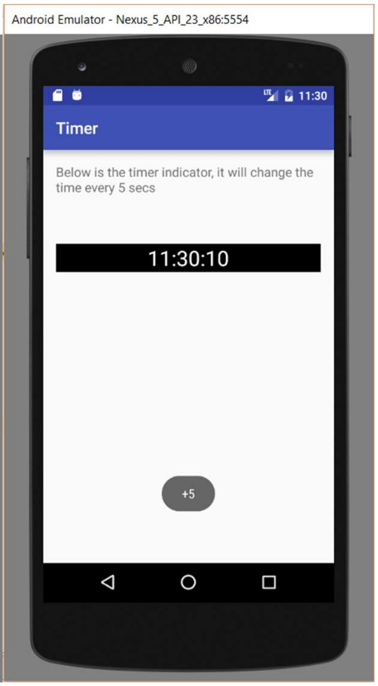
11:30:05



Android Emulator - Nexus_5_API_23_x86:5554

Below is the timer indicator, it will change the time every 5 secs

11:30:05



Android Emulator - Nexus_5_API_23_x86:5554

Below is the timer indicator, it will change the time every 5 secs

11:30:10

Code

1.activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.d27sa.timer.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="16dp"
        android:text="Below is the timer indicator, it will change the time
every 5 secs "

        />

    <TextView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="26dp"
        android:background="#000000"
        android:textColor="#FFFFFF"
        android:text="  "
        android:layout_marginTop="100dp"
        android:gravity="center"
        android:id="@+id/textView"
        />



</RelativeLayout>
```

2.MainaActivity.java

```
package com.example.d27sa.timer;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    Intent intent;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        intent = new Intent (this,TimerService.class);

    }

    @Override
    public void onResume(){
        super.onResume();
        startService(intent);    //intent to switch to service
        registerReceiver(macron,new
IntentFilter(TimerService.BROADCAST_ACTION));// receives intent from the given
path
    }

    @Override
    public void onPause() {
        super.onPause();
        unregisterReceiver(macron);// to unregister the receiver from getting
data from service specified
        stopService(intent);
    }

    public BroadcastReceiver macron = new BroadcastReceiver() {
        @Override
        public void onReceive(Context context, Intent intent) { // as the
received intent is lost it is passed to display
            display(intent);
        }
    };

//    public void StopService(View view)
//    {
//        Intent intent = new Intent (this,TimerService.class);
//        stopService(intent);
//    }


    public void display (Intent intent)
    {
        String time = intent.getStringExtra("timeNow");
        System.out.println(time);
        TextView txtvw = (TextView) findViewById(R.id.textView);// to update
the time in the textview
        txtvw.setText(time);
    }


}
```

3.TimerService.java

```
package com.example.d27sa.timer;

import android.app.Service;
import android.content.Intent;
import android.os.Handler;
import android.os.IBinder;
import android.os.Message;
import android.support.annotation.Nullable;
import android.widget.Toast;

import java.text.SimpleDateFormat;
import java.util.Locale;
import java.util.Timer;
import java.util.TimerTask;

/**
 * Created by d27sa on 28-02-2017.
 */

public class TimerService extends Service {

    Intent intent;
    public static final String BROADCAST_ACTION = "com.example.d27sa.timer";
    private final Handler manager = new Handler(); //handles the data to
braodcast

    @Override
    public void onCreate(){
        super.onCreate();
    }

    @Override
    public int onStartCommand(Intent intent, int flags, int startId) {
        Timer timer = new Timer();
       // timer.scheduleAtFixedRate(dothis ,0,5000);
        manager.postDelayed(gap, 0); // handler called starting with no delay
        return START_STICKY; // process is running in the background
    }

    TimerTask dothis = new TimerTask() {
        @Override
        public void run() {
            toastHandler.sendEmptyMessage(0); //calls the toast handler

        }
    };

    private Runnable gap = new Runnable() {
        public void run(){
            displayTimer();
            manager.postDelayed(this, 5000); // % sec delay provided
           toastHandler.sendEmptyMessage(0);
        }
    };



    /*@Override
    public void onDestroy() {
        Toast.makeText(this, "Service Stopped", Toast.LENGTH_SHORT).show();
    }
*/
   private final Handler toastHandler = new Handler()
    {
        @Override
        public void handleMessage(Message msg)
        {
            Toast.makeText(getApplicationContext(), "+5",
Toast.LENGTH_SHORT).show(); // to taost +5 at every update
        }
    };

    public void displayTimer(){
        intent =new Intent(this,MainActivity.class);
    SimpleDateFormat getVal = new SimpleDateFormat("hh:mm:ss",
Locale.getDefault());
    // gets the default time format and passes to the send broadcast
    intent.putExtra("timeNow",getVal.format(System.currentTimeMillis()));
    sendBroadcast(intent);// registered broadcast gets the intent
    }

    @Nullable
    @Override
    public IBinder onBind(Intent intent) {
        return null;
    }
}
```