[**2CEIT5PE5: MOBILE APPLICATION DEVELOPMENT**]

Practical: 8

AIM - What is BroadcastReceiver? Difference between Service and BroadcastReceiver. Create an Alarm application by using service & BroadcastReceiver by following below instructions.

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activity_main.xml :

```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" >

    <androidx.core.widget.NestedScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        app:layout_constraintStart_toStartOf="parent"
        tools:layout_editor_absoluteY="-82dp">

        <androidx.constraintlayout.widget.ConstraintLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:padding="10dp">


            <TextView
                android:id="@+id/textView"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Mad_Practical_Alarm"
                android:textSize="20sp"
                android:textStyle="bold"
                app:layout_constraintEnd_toEndOf="parent"
                app:layout_constraintHorizontal_bias="0.045"
                app:layout_constraintStart_toStartOf="parent"
                app:layout_constraintTop_toTopOf="parent" />

            <com.google.android.material.card.MaterialCardView
                android:id="@+id/mcv"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginTop="35dp"
                app:cardCornerRadius="5dp"
                app:cardElevation="20dp"
                app:layout_constraintTop_toTopOf="parent"
                tools:layout_editor_absoluteX="10dp">

                <androidx.constraintlayout.widget.ConstraintLayout
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content">

                    <TextView
```

```
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="5dp"
    android:layout_marginTop="15dp"
    android:padding="5dp"
    android:text="By pressing buttons, Alarm can be created and cancelled."
    android:textSize="20sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView3" />

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="5dp"
    android:layout_marginTop="24dp"
    android:text="Create Alarm Time"
    android:textSize="20sp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.066"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/imageView2" />


<ImageView
    android:id="@+id/imageView2"
    android:layout_width="match_parent"
    android:layout_height="199dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="1.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.0"
    app:srcCompat="@drawable/img" />

<TextClock
    android:id="@+id/textClock"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="60dp"
    android:format12Hour="hh:mm:ss a MMM dd yyyy"
    android:padding="10dp"
    android:textStyle="bold"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.533"
```

```xml
        app:layout_constraintStart_toStartOf="@+id/textView4"
        app:layout_constraintTop_toTopOf="@+id/textView4" />

    <com.google.android.material.button.MaterialButton
        android:id="@+id/createAlarm"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:backgroundTint="#008000"
        android:text="Create Alarm"
        app:icon="@drawable/baseline_add_alarm_24"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.056"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView4" />
    </androidx.constraintlayout.widget.ConstraintLayout>
</com.google.android.material.card.MaterialCardView>


<com.google.android.material.card.MaterialCardView
    android:id="@+id/mcv1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="35dp"
    app:cardCornerRadius="5dp"
    app:cardElevation="20dp"
    app:layout_constraintTop_toBottomOf="@+id/mcv">

    <androidx.constraintlayout.widget.ConstraintLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

    <TextView
        android:id="@+id/textView4mcv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="5dp"
        android:layout_marginTop="15dp"
        android:padding="5dp"
        android:text="By pressing buttons, Alarm can be created and cancelled."
        android:textSize="20sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3mcv1" />

    <TextView
        android:id="@+id/textView3mcv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```xml
        android:layout_marginStart="5dp"
        android:layout_marginTop="24dp"
        android:text="Create Alarm Time"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.066"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/imageView2mcv1" />


    <ImageView
        android:id="@+id/imageView2mcv1"
        android:layout_width="match_parent"
        android:layout_height="199dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.0"
        app:srcCompat="@drawable/img" />

    <TextClock
        android:id="@+id/textClockmcv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="60dp"
        android:format12Hour="hh:mm:ss a MMM dd yyyy"
        android:padding="10dp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.533"
        app:layout_constraintStart_toStartOf="@+id/textView4mcv1"
        app:layout_constraintTop_toTopOf="@+id/textView4mcv1" />

    <com.google.android.material.button.MaterialButton
        android:id="@+id/createAlarmmcv1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:backgroundTint="#008000"
        android:text="Cancel Alarm"
        app:icon="@drawable/baseline_add_alarm_24"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.056"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView4mcv1" />
</androidx.constraintlayout.widget.ConstraintLayout>
</com.google.android.material.card.MaterialCardView>
```

</androidx.constraintlayout.widget.ConstraintLayout>

</androidx.core.widget.NestedScrollView>
</androidx.constraintlayout.widget.ConstraintLayout>

AlarmService.kt :

```kotlin
package com.example.mad_practical_8_21012021003

import android.app.Service
import android.content.Intent
import android.media.MediaPlayer
import android.os.IBinder

class AlarmService : Service() {

    lateinit var  player:MediaPlayer

    override fun onBind(intent: Intent): IBinder {
        TODO("Return the communication channel to the service.")
    }

    override fun onDestroy() {
        player.stop()
        super.onDestroy()
    }

    override fun onStartCommand(intent: Intent?, flags: Int, startId: Int): Int {
        if (intent != null){
            player = MediaPlayer.create(this,R.raw.alarm)
            player.start()
        }
        return START_STICKY

    }
}
```


MainActivity.kt :

```kotlin
package com.example.mad_practical_8_21012021003
import android.annotation.SuppressLint
import android.app.AlarmManager
import android.app.PendingIntent
import android.app.TimePickerDialog
import android.content.BroadcastReceiver
import android.content.Intent
import androidx.appcompat.app.AppCompatActivity
```

```kotlin
import android.os.Bundle
import android.view.View
import android.widget.Button
import android.widget.TextClock
import android.widget.TextView
import android.widget.Toast
import com.google.android.material.button.MaterialButton
import com.google.android.material.card.MaterialCardView
import java.text.SimpleDateFormat
import java.util.Calendar
class MainActivity : AppCompatActivity() {

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val addAlarm : MaterialButton = findViewById(R.id.createAlarm)
        val card : MaterialCardView = findViewById(R.id.mcv1)

        card.visibility = View.GONE

        addAlarm.setOnClickListener {
            TimePickerDialog(this, {tp, hour, minute -> setAlarmTime(hour, minute) },
Calendar.getInstance().get(Calendar.HOUR), Calendar.getInstance().get(Calendar.MINUTE),
false).show()
            card.visibility = View.VISIBLE
        }

        val cancelAlarm : MaterialButton = findViewById(R.id.createAlarmmcv1)
        cancelAlarm.setOnClickListener {
            stop()
            card.visibility = View.GONE
        }
    }

    private fun setAlarmTime(hour : Int, minute : Int){
        val alarmtime = Calendar.getInstance()
        val year = alarmtime.get(Calendar.YEAR)
        val month = alarmtime.get(Calendar.MONTH)
        val date = alarmtime.get(Calendar.DATE)
        alarmtime.set(year, month, date, hour, minute, 0)
        val textAlarmTime : TextClock = findViewById(R.id.textClock)
        textAlarmTime.text = SimpleDateFormat("hh:mm:ss a").format(alarmtime.time)
        setAlarm(alarmtime.timeInMillis, AlarmBroadcastReceiver.ALARM_START)
        Toast.makeText(this, "Alarm Set", Toast.LENGTH_LONG).show()
    }

    fun stop() {
        setAlarm(-1, AlarmBroadcastReceiver.ALARM_STOP)
    }
```

```
    fun setAlarm(militime : Long, action : String) {
        val intentalarm = Intent(applicationContext, AlarmBroadcastReceiver::class.java)
        intentalarm.putExtra(AlarmBroadcastReceiver.ALARM_KEY, action)
        val pendingintent = PendingIntent.getBroadcast(applicationContext, 4356, intentalarm,
PendingIntent.FLAG_UPDATE_CURRENT or PendingIntent.FLAG_IMMUTABLE)
        val alarmmanager = getSystemService(ALARM_SERVICE) as AlarmManager

        if (action == AlarmBroadcastReceiver.ALARM_START) {
            alarmmanager.setExact(AlarmManager.RTC_WAKEUP, militime, pendingintent)
        }
        else if (action == AlarmBroadcastReceiver.ALARM_STOP) {
            alarmmanager.cancel(pendingintent)
            sendBroadcast(intentalarm)
        }
    }
}
```
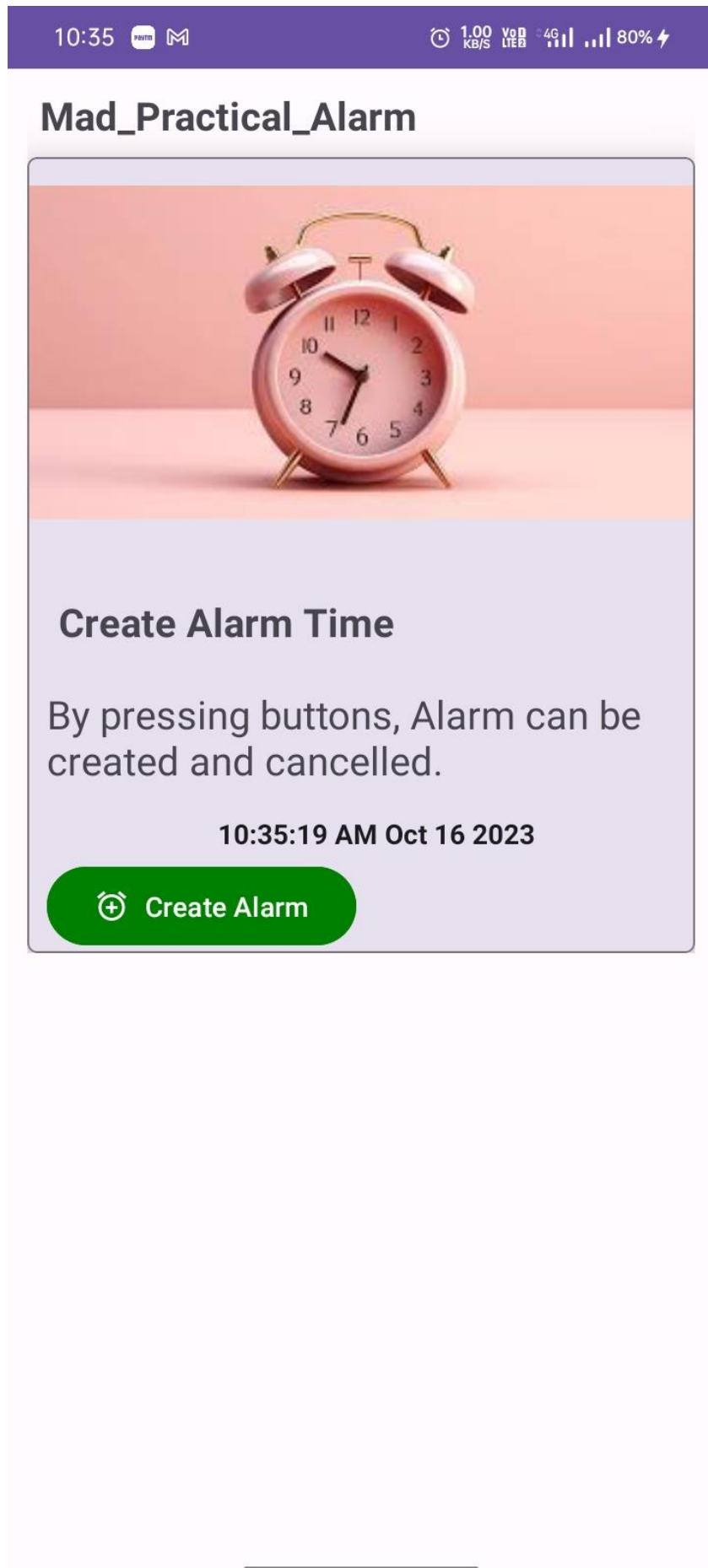
AlarmBroadcastReceiver.kt :

package com.example.mad_practical_8_21012021001

import android.content.BroadcastReceiver
import android.content.Context
import android.content.Intent

```
class AlarmBroadcastReceiver : BroadcastReceiver() {
    companion object{
        val ALARM_KEY = "key"
        val ALARM_START = "start"
        val ALARM_STOP = "stop"
    }
    override fun onReceive(context: Context, intent: Intent) {
        // This method is called when the BroadcastReceiver is receiving an Intent broadcast.

        val DATA = intent.getStringExtra(ALARM_KEY)
        val intentservice = Intent(context,AlarmService::class.java)
        if(DATA == ALARM_START){
            context.startService(intentservice)
        }
        else{
            context.startService(intentservice)
        }
    }

}
```