**[ 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 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"  
 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"  
 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 :**

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 :**

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  
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)  
 }  
 }  
  
}



