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.

1. Create MainActivity according to below UI design.

2. Create AlarmBroadcastReceiver class

3. Create AlarmService Class

4. Add android.permission.SCHEDULE_EXACT_ALARM Permission in Manifest file.

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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"
    app:layout_constraintTop_toTopOf="parent">

    <androidx.constraintlayout.widget.ConstraintLayout
      android:layout_width="match_parent"
      android:layout_height="match_parent">
      <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        android:text="@string/app_name"
        android:textSize="20sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

      <com.google.android.material.card.MaterialCardView
        android:id="@+id/card"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="20dp"
        app:cardElevation="20dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView">

        <LinearLayout
          android:layout_width="match_parent"
          android:layout_height="wrap_content"
          android:orientation="vertical">

          <ImageView
```

```xml
            android:id="@+id/imageView"
            android:layout_width="match_parent"
            android:layout_height="194dp"
            android:scaleType="fitXY"
            app:srcCompat="@drawable/image" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:padding="16dp">

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Create Alarm Time"
            android:textAppearance="?attr/textAppearanceHeadline6" />

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginTop="8dp"
            android:text="Be pressing buttons,Alarm can be created And cancelled."
            android:textAppearance="?attr/textAppearanceBody2" />

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginTop="8dp"
            android:text="Check Current Time By looking below real digital clock"
            android:textAppearance="?attr/textAppearanceBody2" />

        <TextClock
            android:id="@+id/clocktime"
            android:format12Hour="hh:mm:ss a MMM dd yyyy"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_margin="20dp"
            android:padding="10dp"
            android:textAlignment="center"/>

        <com.google.android.material.button.MaterialButton
            android:id="@+id/create"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Create Alarm"
```

```xml
                app:icon="@drawable/baseline_add_alarm_24"/>
        </LinearLayout>
    </LinearLayout>

</com.google.android.material.card.MaterialCardView>

<com.google.android.material.card.MaterialCardView
    android:id="@+id/card2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp"
    app:cardElevation="20dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/card">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical">

        <ImageView
            android:id="@+id/imageView2"
            android:layout_width="match_parent"
            android:layout_height="194dp"
            android:scaleType="fitXY"
            app:srcCompat="@drawable/image"/>

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            android:padding="16dp">

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="Set Alarm Time:"
                android:layout_gravity="center"
                android:textAppearance="?attr/textAppearanceHeadline6"/>

            <TextClock
                android:id="@+id/clocktime2"
                android:format12Hour="hh:mm:ss a MMM dd yyyy"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
```

```
                    android:layout_margin="20dp"
                    android:padding="10dp"
                    android:textAlignment="center"/>

                <com.google.android.material.button.MaterialButton
                    android:id="@+id/cancel"
                    android:layout_width="wrap_content"
                    android:layout_height="wrap_content"
                    android:text="Cancel Alarm"
                    app:icon="@drawable/baseline_alarm_off_24"/>
            </LinearLayout>
        </LinearLayout>

    </com.google.android.material.card.MaterialCardView>
  </androidx.constraintlayout.widget.ConstraintLayout>
 </androidx.core.widget.NestedScrollView>

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.kt :-

```kotlin
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.create)
```

```kotlin
    val card : MaterialCardView = findViewById(R.id.card2)

    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.cancel)
    cancelAlarm.setOnClickListener {
        stop()
        card.visibility = View.GONE
    }
}

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.clocktime2)
    textAlarmTime.text = SimpleDateFormat("hh:mm:ss a").format(alarmtime.time)
    setAlarm(alarmtime.timeInMillis, AlarmBroadcastReceiver.ALARMSTART)
    Toast.makeText(this, "Alarm Set", Toast.LENGTH_LONG).show()
}

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

fun setAlarm(militime : Long, action : String) {
    val intentalarm = Intent(applicationContext, AlarmBroadcastReceiver::class.java)
    intentalarm.putExtra(AlarmBroadcastReceiver.ALARMKEY, 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.ALARMSTART) {
        alarmmanager.setExact(AlarmManager.RTC_WAKEUP, militime, pendingintent)
    }
    else if (action == AlarmBroadcastReceiver.ALARMSTOP) {
        alarmmanager.cancel(pendingintent)
        sendBroadcast(intentalarm)
```

```
        }
    }
}
```

AlarmService.kt :-

```
package com.example.mad_practical_8_21012021070

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("Practical-8")
    }

    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
    }

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

AlarmBroadcastReceiver.kt :-

```
package com.example.mad_practical_8_21012021070

import android.content.BroadcastReceiver
import android.content.Context
```

```
import android.content.Intent

class AlarmBroadcastReceiver : BroadcastReceiver() {

    companion object {
        val ALARMKEY = "KEY"
        val ALARMSTART = "START"
        val ALARMSTOP = "STOP"
    }

    override fun onReceive(context: Context, intent: Intent) {
        if (intent != null) {
            val data = intent.getStringExtra(ALARMKEY)

            if (data != null) {

                val intentservice = Intent(context, AlarmService::class.java)

                if (data == ALARMSTART) {
                    context.startService(intentservice)
                }
                else{
                    context.stopService(intentservice)
                }
            }
        }
    }
}
```

AndroidManifest.xml :-

```
<uses-permission android:name="android.permission.SCHEDULE_EXACT_ALARM" />
<uses-permission android:name="android.permission.USE_EXACT_ALARM" />
```

Output :-