

# Alarm 활용(실습)

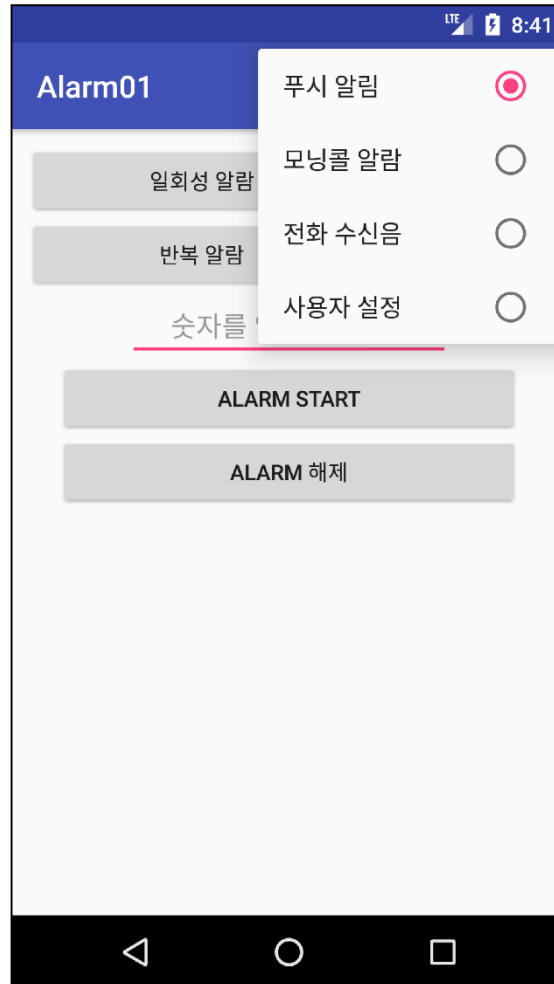
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# Alarm 예제 1

- 다음과 같이 [알람 설정] 버튼을 누르면 5초 후에 알람이 울리도록 만들어보자





# Alarm 예제 1

## ■ 사용자 인터페이스

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_margin="10dp"
    android:orientation="vertical"
    tools:context="com.example.bae.alarm01.MainActivity">

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

        <LinearLayout
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:orientation="vertical">
```



# Alarm 예제 1

## ■ 사용자 인터페이스

```
<Button
    android:id="@+id/button1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="일회성 알람" />
<Button
    android:id="@+id/button2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:text="반복 알람" />
</LinearLayout>
<Button
    android:id="@+id/button3"
    android:layout_width="0dp"
    android:layout_height="match_parent"
    android:layout_weight="0.5"
    android:text="알람 취소" />
</LinearLayout>
```



# Alarm 예제 1

## ■ 사용자 인터페이스

<EditText

```
    android:id="@+id/time"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_gravity="center"  
    android:ems="10"  
    android:gravity="center"  
    android:hint="숫자를 입력해주세요"  
    android:inputType="number" />
```

<Button

```
    android:id="@+id/button4"  
    android:layout_width="300dp"  
    android:layout_height="wrap_content"  
    android:layout_gravity="center"  
    android:text="Alarm Start" />
```



# Alarm 예제 1

## ■ 사용자 인터페이스

```
<Button  
    android:id="@+id/button5"  
    android:layout_width="300dp"  
    android:layout_height="wrap_content"  
    android:layout_gravity="center"  
    android:text="Alarm 해제" />  
</LinearLayout>
```



# Alarm 예제 1

## ■ menu.xml

```
<menu xmlns:android="http://schemas.android.com/apk/res/android"
      xmlns:app="http://schemas.android.com/apk/res-auto">
  <group android:checkableBehavior="single">
    <item
      android:id="@+id/item1"
      android:checked="true"
      android:title="푸시 알림" />
    <item
      android:id="@+id/item2"
      android:title="모닝콜 알람" />
    <item
      android:id="@+id/item3"
      android:title="전화 수신음" />
    <item
      android:id="@+id/item4"
      android:title="사용자 설정" />
  </group>
</menu>
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
public class MainActivity extends AppCompatActivity {  
    AlarmManager manager;  
    EditText editText;  
    static int type = 0;
```

@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);
```

```
    manager = (AlarmManager) getSystemService(ALARM_SERVICE);  
    editText = findViewById(R.id.time);  
    Button button1 = findViewById(R.id.button1);  
    Button button2 = findViewById(R.id.button2);  
    Button button3 = findViewById(R.id.button3);  
    Button button4 = findViewById(R.id.button4);  
    Button button5 = findViewById(R.id.button5);
```





# Alarm 예제 1

## ■ MainActivity.JAVA

```
button1.setOnClickListener(myClickListener);
button2.setOnClickListener(myClickListener);
button3.setOnClickListener(myClickListener);
button4.setOnClickListener(myClickListener);
button5.setOnClickListener(myClickListener);
}

Button.OnClickListener myClickListener = new Button.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent intent = new Intent(MainActivity.this, AlarmReceiver.class);
        PendingIntent pending, pending1;
        Calendar calendar = Calendar.getInstance();
        switch (view.getId()) {
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
case R.id.button1:
    intent.putExtra("tag", "일회성");
    pending = PendingIntent.getBroadcast(getBaseContext(), 0,
        intent, PendingIntent.FLAG_CANCEL_CURRENT);
    calendar.setTimeInMillis(System.currentTimeMillis());
    if (Build.VERSION.SDK_INT >= 19) {
        manager.setExact(AlarmManager.RTC, calendar.getTimeInMillis()
            + 5000, pending);
    } else {
        manager.set(AlarmManager.RTC, calendar.getTimeInMillis()
            + 5000, pending);
    }
    Toast.makeText(getBaseContext(), "일회성 알람",
        Toast.LENGTH_SHORT).show();
    break;
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
case R.id.button2:
    intent.putExtra("tag", "반복");
    pending1 = PendingIntent.getBroadcast(MainActivity.this, 1,
        intent, PendingIntent.FLAG_UPDATE_CURRENT);
    calendar.setTimeInMillis(System.currentTimeMillis());
    calendar.add(Calendar.SECOND, 0);
    manager.setInexactRepeating(AlarmManager.RTC,
        calendar.getTimeInMillis(), 5000, pending1);
    Toast.makeText(getBaseContext(), "반복 알람",
        Toast.LENGTH_SHORT).show();
    break;
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
case R.id.button3:
    intent.putExtra("tag", "해제");
    pending = PendingIntent.getBroadcast(MainActivity.this, 0,
                                    intent, PendingIntent.FLAG_NO_CREATE);
    pending1 = PendingIntent.getBroadcast(MainActivity.this, 1,
                                    intent, PendingIntent.FLAG_NO_CREATE);
    if (pending != null) {
        manager.cancel(pending);
        pending.cancel();
        AlarmReceiver.player.stop();
        AlarmReceiver.manager.cancel(1);
        Toast.makeText(getApplicationContext(), "일회성 알람 해제",
                                Toast.LENGTH_SHORT).show();
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
} else if (pending1 != null) {  
    manager.cancel(pending1);  
    pending1.cancel();  
    AlarmReceiver.player.stop();  
    AlarmReceiver.manager.cancel(1);  
    Toast.makeText(getApplicationContext(), "반복 알람 해제",  
                                           Toast.LENGTH_SHORT).show();  
} else {  
    Toast.makeText(getApplicationContext(), "현재 알람이 없습니다",  
                                           Toast.LENGTH_SHORT).show();  
}  
break;
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
case R.id.button4:
    intent.putExtra("tag", "예약알람");
    String tmp = editText.getText().toString();
    if (tmp.equals("") || tmp.equals("0")) {
        Toast.makeText(getApplicationContext(), "입력해주세요",
            Toast.LENGTH_LONG).show();
    } else {
        int time = Integer.parseInt(tmp);
        pending = PendingIntent.getBroadcast(getApplicationContext(), 2,
            intent, PendingIntent.FLAG_CANCEL_CURRENT);
        manager.set(AlarmManager.RTC_WAKEUP, System.currentTimeMillis()
            + (time * 1000), pending);
        Toast.makeText(getApplicationContext(), time
            + "초 후에 Alarm이 울립니다", Toast.LENGTH_LONG).show();
    }
break;
```



# Alarm 예제 1

## ■ MainActivity.JAVA

```
case R.id.button5:
    intent.putExtra("tag", "해제");
    pending = PendingIntent.getBroadcast(getBaseContext(), 2,
                                     intent, PendingIntent.FLAG_NO_CREATE);
    if (pending != null) {
        manager.cancel(pending);
        pending.cancel();
        Toast.makeText(getBaseContext(), "Alarm 해제",
                       Toast.LENGTH_SHORT).show();
        AlarmReceiver.player.stop();
        AlarmReceiver.manager.cancel(2);
    } else {
        Toast.makeText(getBaseContext(), "Alarm이 없습니다",
                       Toast.LENGTH_SHORT).show();
    }
}
};
```



# Alarm 예제 1

## ■ MainActivity.JAVA

@Override

```
public boolean onCreateOptionsMenu(Menu menu) {  
    MenuInflater inflater = getMenuInflater();  
    inflater.inflate(R.menu.menu, menu);  
    return true;  
}
```





# Alarm 예제 1



## ■ MainActivity.JAVA

@Override

```
public boolean onOptionsItemSelected(MenuItem item) {  
    if(item.getItemId()==R.id.item1){  
        Toast.makeText(this, "푸시 알림", Toast.LENGTH_SHORT).show();  
        type = 0;  
    } else if (item.getItemId()==R.id.item2){  
        Toast.makeText(this, "모닝콜 알람", Toast.LENGTH_SHORT).show();  
        type = 1;  
    } else if (item.getItemId()==R.id.item3) {  
        Toast.makeText(this, "전화 수신음", Toast.LENGTH_SHORT).show();  
        type = 2;  
    } else if (item.getItemId()==R.id.item4) {  
        Toast.makeText(this, "사용자 설정", Toast.LENGTH_SHORT).show();  
        type = 3;  
    }  
    item.setChecked(true);  
    return super.onOptionsItemSelected(item);  
}
```



# Alarm 예제 1

## ■ AlarmReceiver.JAVA

```
public class AlarmReceiver extends BroadcastReceiver {
    static MediaPlayer player;
    static NotificationManager manager;
    static final String CHANNEL_ID = "channel_01";

    @Override
    public void onReceive(Context context, Intent intent) {
        manager = (NotificationManager) context.
            getSystemService(Context.NOTIFICATION_SERVICE);
        if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
            CharSequence name = "My Notification";
            String description = "My notification description";
            int importance = NotificationManager.IMPORTANCE_DEFAULT;
            NotificationChannel notificationChannel =
                new NotificationChannel(CHANNEL_ID, name, importance);
            notificationChannel.setDescription(description);
            manager.createNotificationChannel(notificationChannel);
        }
    }
}
```



# Alarm 예제 1

## ■ AlarmReceiver.JAVA

```
Notification.Builder builder;
if (android.os.Build.VERSION.SDK_INT >=
    android.os.Build.VERSION_CODES.O) {
    builder = new Notification.Builder(context, CHANNEL_ID);
} else
    builder = new Notification.Builder(context);
if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP) {
    builder.setSmallIcon(R.drawable.goldcoin)
        .setTicker("알람")
        .setWhen(System.currentTimeMillis())
        .setNumber(1)
        .setColor(Color.RED)
        .setContentTitle("알람 설정")
        .setContentText("설정된 알람이 작동했습니다")
        .setDefaults(Notification.DEFAULT_SOUND |
            Notification.DEFAULT_VIBRATE)
        .setAutoCancel(true);
}
manager.notify(1, builder.build());
```



# Alarm 예제 1



## ■ AlarmReceiver.JAVA

```
Uri uri;
if (MainActivity.type == 0)
    uri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
else if (MainActivity.type == 1)
    uri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
else if (MainActivity.type == 2)
    uri = RingtoneManager.getDefaultUri(RingtoneManager.TYPE_RINGTONE);
else
    uri = Uri.parse(
        "android.resource://com.example.bae.alarm00/raw/alarm_sound");
player = MediaPlayer.create(context, uri);
String tag = intent.getStringExtra("tag");
if (tag.equals("일회성") || tag.equals("반복") || tag.equals("예약알람")) {
    player.start();
    Toast.makeText(context, tag + " 알람 울림", Toast.LENGTH_SHORT).show();
}
}
```



# Alarm 예제 1

## ■ 메니페스트 파일

```
<?xml version="1.0" encoding="utf-8" ?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.bae.alarm01">
    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <receiver android:name=".AlarmReceiver"/>
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />
                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```



# Alarm 예제 1

## ■ 메니페스트 파일

```
<receiver  
    android:name="com.example.bae.alarm00.AlarmReceiver"  
    android:exported="false"  
    android:process=":remote">  
</receiver>  
</application>  
</manifest>
```

- ✓ <applicatoin> ... </application> 안에 넣어주면 된다
- ✓ Receiver 속성 중 name은 Alarm Receiver 클래스의 이름
- ✓ process 속성으로 remote를 주면 BroadCast 리시버를 별도의 프로세스로 동작 시킨다는 의미



# Alarm 예제 1

## ■ Android 제공 기본 System 효과음 재생 방법

### ■ 효과음 식별자(URI) 획득

- SmartPhone에 등록된 효과음의 식별자를 Uri 타입으로 획득해야 함
- 효과음은 RingtoneManager의 getDefaultUri() 메소드를 이용해서 획득

```
// 푸시 알림 메시지 소리
```

```
Uri uri = RingtoneManager.getDefaultUri(  
                                RingtoneManager.TYPE_NOTIFICATION);
```

```
// 모닝콜 알람 소리
```

```
Uri uri = RingtoneManager.getDefaultUri(  
                                RingtoneManager.TYPE_ALARM);
```

```
// 전화 수신음 소리
```

```
Uri uri = RingtoneManager.getDefaultUri(  
                                RingtoneManager.TYPE_RINGTONE);
```

```
// 내 폰에 위치한 음악
```

```
Uri uri = Uri.parse("android.resource://패키지명/raw/파일명");
```



# Alarm 예제 1

- Android 제공 기본 System 효과음 재생 방법

- Ringtone 객체 생성

- uri에 해당하는 효과음을 재생할 Ringtone 객체를 생성

```
Ringtone ringtone = RingtoneManager.getRingtone(  
    getApplicationContext(), uri);
```

- 효과음 재생

- Uri 값으로 식별되는 효과음을 재생할 수 있는  
Ringtone을 얻어 play() 메소드로 재생

```
ringtone.play();
```

- 효과음 멈춤

- Ringstone 객체로 효과음을 멈춤

```
ringtone.stop();
```



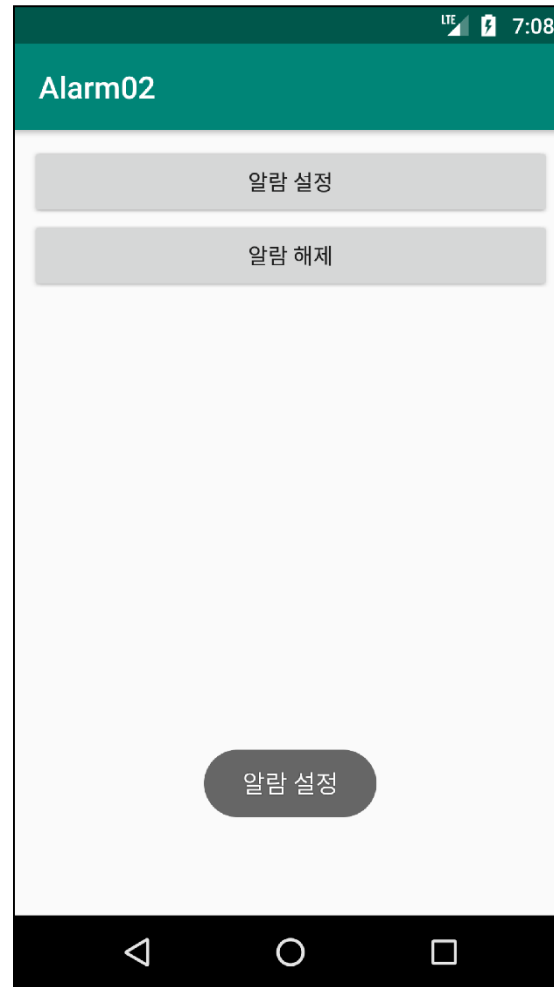
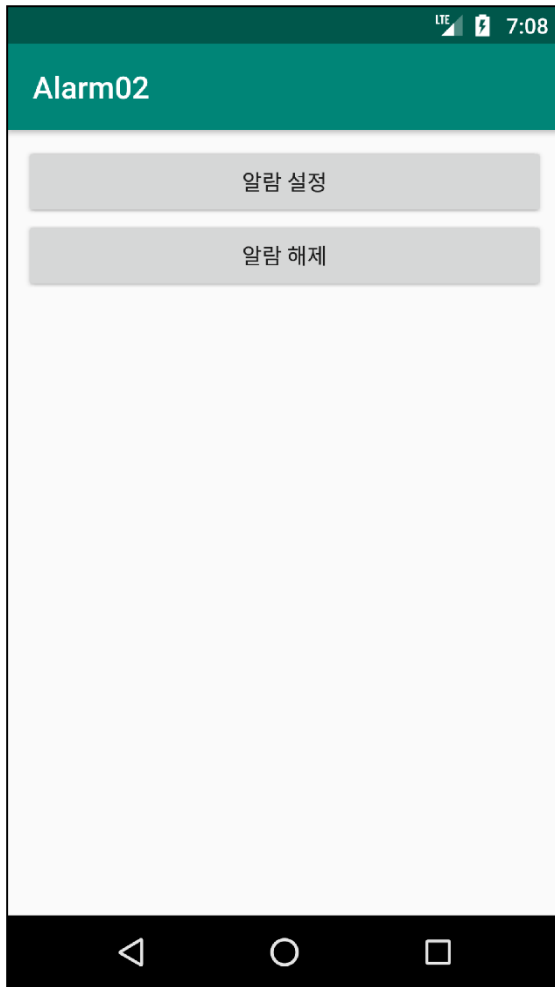


# Alarm 예제 1

- Android 제공 기본 System 효과음 재생 방법
  - 볼륨 설정
    - Ringtone 객체.setVolume() 메소드로 현재의 볼륨값을 설정할 수 있음
    - Ringtone 객체.getVolume() 메소드로 현재의 볼륨값을 체크할 수 있음
    - 0.0(무음) ~ 1.0(최대) 값으로 소리 크기를 조정할 수 있음
  - Ringtone 객체.isPlaying() 메소드로 재생 상태를 체크할 수 있음



# Alarm 활용 2





# Alarm 활용 2

## ■ 사용자 인터페이스

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="10dp"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/start"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="알람 설정"/>
    <Button
        android:id="@+id/stop"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="알람 해제"/>
</LinearLayout>
```



# Alarm 활용 2

## ■ MainActivity.JAVA

```
public class MainActivity extends AppCompatActivity {  
    AlarmManager manager;  
    Intent intent;  
    PendingIntent pending;
```

@Override

```
protected void onCreate(Bundle savedInstanceState) {  
    super.onCreate(savedInstanceState);  
    setContentView(R.layout.activity_main);
```

```
    manager = (AlarmManager) getSystemService(Context.ALARM_SERVICE);  
    intent = new Intent(MainActivity.this, AlarmBroadcasting.class);
```



# Alarm 활용 2

## ■ MainActivity.JAVA

```
Button button = findViewById(R.id.start);
button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        pending = PendingIntent.getBroadcast(MainActivity.this, 0, intent,
            PendingIntent.FLAG_UPDATE_CURRENT);
        Calendar calendar = Calendar.getInstance();
        calendar.setTimeInMillis(System.currentTimeMillis());
        calendar.add(Calendar.SECOND, 5); // 5초 후
        manager.set(AlarmManager.RTC_WAKEUP, calendar.getTimeInMillis(),
            pending);

        Toast.makeText(getApplicationContext(), "알람 설정",
            Toast.LENGTH_SHORT).show();
    }
});
```



# Alarm 활용 2

## ■ MainActivity.JAVA

```
Button button1 = findViewById(R.id.stop);
button1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        pending = PendingIntent.getBroadcast(MainActivity.this, 0, intent,
                                           PendingIntent.FLAG_NO_CREATE);

        if (pending != null) {
            manager.cancel(pending);
            pending.cancel();
            Toast.makeText(getBaseContext(), "알람 해제",
                          Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(getBaseContext(),
                          "알람이 없습니다", Toast.LENGTH_SHORT).show();
        }
    }
});
}
```



# Alarm 활용 2

## ■ AlarmBroadcasting.JAVA

```
public class AlarmBroadcasting extends BroadcastReceiver {  
  
    @RequiresApi(api = Build.VERSION_CODES.JELLY_BEAN)  
    @Override  
    public void onReceive(Context context, Intent intent) {  
        NotificationManager manager = (NotificationManager) context.  
            getSystemService(Context.NOTIFICATION_SERVICE);  
        Intent intent1 = new Intent(context, MainActivity.class);  
        PendingIntent pendingIntent = PendingIntent.getActivity(context, 0, intent1,  
            PendingIntent.FLAG_UPDATE_CURRENT);  
        Notification.Builder builder = new Notification.Builder(context);
```



# Alarm 활용 2

## ■ AlarmBroadcasting.JAVA

```
if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.LOLLIPOP) {  
    builder.setSmallIcon(R.drawable.goldcoin)  
        .setTicker("알람")  
        .setWhen(System.currentTimeMillis())  
        .setNumber(1)  
        .setColor(Color.RED)  
        .setContentTitle("알람 설정")  
        .setContentText("설정된 알람이 작동했습니다")  
        .setDefaults(Notification.DEFAULT_SOUND |  
                                Notification.DEFAULT_VIBRATE)  
        .setContentIntent(pendingIntent)  
        .setAutoCancel(true);  
}  
manager.notify(1, builder.build());  
}
```





# Alarm 활용 2

## ■ 메니페스트

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.alarm02">

    <uses-permission android:name="android.permission.VIBRATE"/>
    <uses-permission android:name="android.permission.WAKE_LOCK"/>

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <receiver android:name="com.example.alarm02.AlarmBroadcasting"/>

        <activity android:name="com.example.alarm02.MainActivity">
            <intent-filter>
```