

임베디드 시스템 실습 lab13

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이번 exercise 는 이전에 구현하였던 temperature converter 을 kotlin 으로 구현하고 notification 을 추가하는 것입니다.

우선 layout 과 string 은 이전과 동일하게 하였습니다.

```
activity_main.xml x MainActivity.kt x strings.xml x
1 <LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
2   xmlns:tools="http://schemas.android.com/tools"
3   android:layout_width="match_parent"
4   android:layout_height="match_parent"
5   android:orientation="vertical"
6   android:background="@color/myColor">
7
8
9   <EditText
10    android:layout_width="match_parent"
11    android:layout_height="wrap_content"
12    android:id="@+id/inputValue"
13    android:inputType="numberSigned|numberDecimal"/>
14
15   <RadioGroup
16    android:id="@+id/radioGroup1"
17    android:layout_width="wrap_content"
18    android:layout_height="wrap_content"
19    android:layout_alignStart="@+id/editText1"
20    android:layout_below="@+id/editText1"
21    android:layout_alignLeft="@+id/editText1">
22
23     <RadioButton
24      android:id="@+id/radio0"
25      android:layout_width="wrap_content"
26      android:layout_height="wrap_content"
27      android:checked="true"
28      android:text="@string/celsius" />
29
30     <RadioButton
31      android:id="@+id/radio1"
32      android:layout_width="wrap_content"
33      android:layout_height="wrap_content"
34      android:text="@string/fahrenheit" />
35   </RadioGroup>
36
37   <Button
38    android:id="@+id/button1"
39    android:layout_width="wrap_content"
40    android:layout_height="wrap_content"
41    android:layout_alignStart="@+id/radioGroup1"
42    android:layout_below="@+id/radioGroup1"
43    android:layout_marginTop="22dp"
44    android:text="@string/calc"
45    android:onClick="onClick"
46    android:layout_alignLeft="@+id/radioGroup1" />
47
48 </LinearLayout>
```

```
activity_main.xml x MainActivity.kt x strings.xml x
Edit translations for all locales in the translations editor.
1 <?xml version="1.0" encoding="utf-8"?>
2 <resources>
3
4   <string name="app_name">Temperature Converter</string>
5   <string name="action_settings">Settings</string>
6   <string name="hello_world">Hello world!</string>
7   <color name="myColor">#F5F5F5</color>
8   <string name="celsius">to Celsius</string>
9   <string name="fahrenheit">to Fahrenheit</string>
10  <string name="calc">Calculate</string>
11
12 </resources>
```

주 코드인 MainActivity 는 아래와 같습니다.

```
activity_main.xml x MainActivity.kt x strings.xml x
1 package com.example.week13
2
3 import android.annotation.SuppressLint
4 import android.app.NotificationChannel
5 import android.app.NotificationManager
6 import android.content.Context
7 import android.os.Build
8 import android.os.Bundle
9 import android.view.View
10 import android.widget.EditText
11 import android.widget.RadioButton
12 import android.widget.Toast
13 import androidx.annotation.RequiresApi
14 import androidx.appcompat.app.AppCompatActivity
15 import androidx.core.app.NotificationCompat
16 import java.lang.String
17
18 class MainActivity : AppCompatActivity() {
19     var text : EditText? = null
20     var CHANNEL_ID = "channel_ID"
21     var inputValue : Float? = null
22     var outputValue : Float? = null
23
24     @RequiresApi(Build.VERSION_CODES.O)
25     override fun onCreate(savedInstanceState: Bundle?) {
26         super.onCreate(savedInstanceState)
27         setContentView(R.layout.activity_main)
28         text = findViewById(R.id.inputValue)
29
30         createNoficationChannel()
31
32     }
```

여기서 text 는 사용자가 입력하는 숫자, CHANNEL_ID 는 notification 의 number, inputValue 는 text 를 float 형으로 변경한 것, outputValue 는 inputValue 을 계산한 값입니다.

```

31
32     }
33     fun onClick(view: View) {
34         when (view.getId()) {
35             R.id.button1 -> {
36                 val celsiusButton : RadioButton = findViewById(R.id.radio0)
37                 val fahrenheitButton : RadioButton = findViewById(R.id.radiol)
38                 if (text!!.text.length == 0) {
39                     Toast.makeText(
40                         context: this, text: "Please enter a valid number",
41                         Toast.LENGTH_LONG
42                     ).show()
43                     return
44                 }
45                 inputValue = text!!.text.toString().toFloat()
46                 if (celsiusButton.isChecked) {
47                     outputValue = (inputValue!! - 32) * 5 / 9
48                     text!!.setText(
49                         String
50                             .valueOf(outputValue!!)
51                     )
52                     celsiusButton.isChecked = false
53                     fahrenheitButton.isChecked = true
54                     addNotification1()
55                 } else {
56                     outputValue = (inputValue!! * 9 ) / 5 + 32
57                     text!!.setText(
58                         String
59                             .valueOf(outputValue!!)
60                     )
61                     fahrenheitButton.isChecked = false
62                     celsiusButton.isChecked = true
63                     addNotification2()
64                 }
65             }
66         }
67     }

```

버튼을 눌렀을 때 동작하는 코드입니다. 이번에는 class 를 따로 구현해서 계산하지 않고 MainActivity 안에서 계산하게 해주었고, addNotification 을 추가하였습니다.

```
activity_main.xml x MainActivity.kt x strings.xml x
68
69 @SuppressWarnings("PrivateResource")
70 private fun addNotification1() {
71     var builder =
72         NotificationCompat.Builder(context: this, CHANNEL_ID)
73         .setSmallIcon(R.drawable.notification_icon_background)
74         .setContentTitle("week13")
75         .setContentText("$inputValue fahrenheit is converted to $outputValue celcius")
76         .setPriority(NotificationCompat.PRIORITY_DEFAULT)
77     var manager =
78         getSystemService(Context.NOTIFICATION_SERVICE) as NotificationManager
79     manager.notify(id: 0, builder.build())
80 }
81
82 @SuppressWarnings("PrivateResource")
83 private fun addNotification2() {
84     var builder =
85         NotificationCompat.Builder(context: this, CHANNEL_ID)
86         .setSmallIcon(R.drawable.notification_icon_background)
87         .setContentTitle("week13")
88         .setContentText("$inputValue celcius is converted to $outputValue fahrenheit")
89         .setPriority(NotificationCompat.PRIORITY_DEFAULT)
90     var manager =
91         getSystemService(Context.NOTIFICATION_SERVICE) as NotificationManager
92     manager.notify(id: 0, builder.build())
93 }
94
95
96 @SuppressWarnings("PrivateResource")
97 private fun createNotificationChannel() {
98     if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
99         val name = "week13"
100         val descriptionText = "week13"
101         val importance = NotificationManager.IMPORTANCE_DEFAULT
102         val channel = NotificationChannel(CHANNEL_ID, name, importance)
103         channel.setDescription(descriptionText)
104         val notificationManager: NotificationManager =
105             getSystemService(Context.NOTIFICATION_SERVICE) as NotificationManager
106         notificationManager.createNotificationChannel(channel)
107     }
108 }
109
110
111 }
112
```

notification 관련 code 입니다. Celsius -> Fahrenheit 인 경우와 Fahrenheit -> Celsius 경우를 각 1 번과 2 번으로 나누었고, 그에 맞추어 title 과 text 출력을 설정하였습니다.

실행 화면입니다.



