

ĐẠI HỌC BÁCH KHOA HÀ NỘI
TRƯỜNG CÔNG NGHỆ THÔNG TIN VÀ TRUYỀN THÔNG



BÁO CÁO BÀI TẬP VỀ NHÀ

HỌC PHẦN: PHÁT TRIỂN ỨNG DỤNG CHO THIẾT BỊ DI ĐỘNG

(Mã học phần: IT4785)

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Create XML layouts for Android

Add cost of service text field

```
<EditText
    android:id="@+id/cost_of_service"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:autofillHints="@string/cost_of_service"
    android:hint="@string/cost_of_service"
    android:inputType="numberDecimal"
    android:minHeight="48dp"
    android:textColorHint="#546E7A"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
```

Add the service question

```
<TextView
    android:id="@+id/service_question"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/how_was_the_service"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/cost_of_service" />
```

Add tip options

```
<RadioGroup
    android:id="@+id/tip_options"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:checkedButton="@+id/option_twenty_percent"
    android:orientation="vertical"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/service_question">

    <RadioButton
        android:id="@+id/option_twenty_percent"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/amazing_service" />

    <RadioButton
        android:id="@+id/option_eighteen_percent"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/good_service" />

    <RadioButton
        android:id="@+id/option_fifteen_percent"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/ok_service" />
</RadioGroup>
```

Add a Switch for rounding up the tip

```
<Switch
    android:id="@+id/round_up_switch"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:checked="true"
    android:minHeight="48dp"
    android:text="@string/round_up_tip"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="@id/tip_options"
    app:layout_constraintTop_toBottomOf="@id/tip_options" />
```

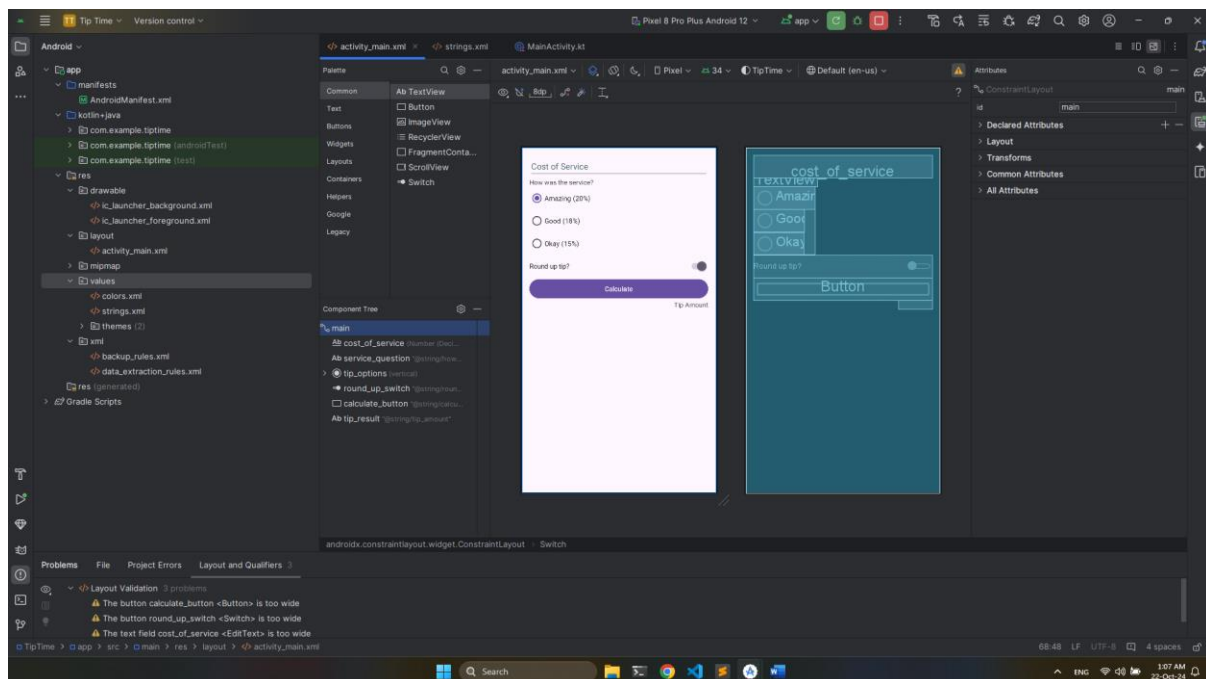
Add the Calculate button

```
<Button
    android:id="@+id/calculate_button"
    android:layout_width="0dp"
    android:layout_height="wrap_content"
    android:text="@string/calculate"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@id/round_up_switch" />
```

Add tip result

```
<TextView
    android:id="@+id/tip_result"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="@string/tip_amount"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@id/calculate_button" />
```

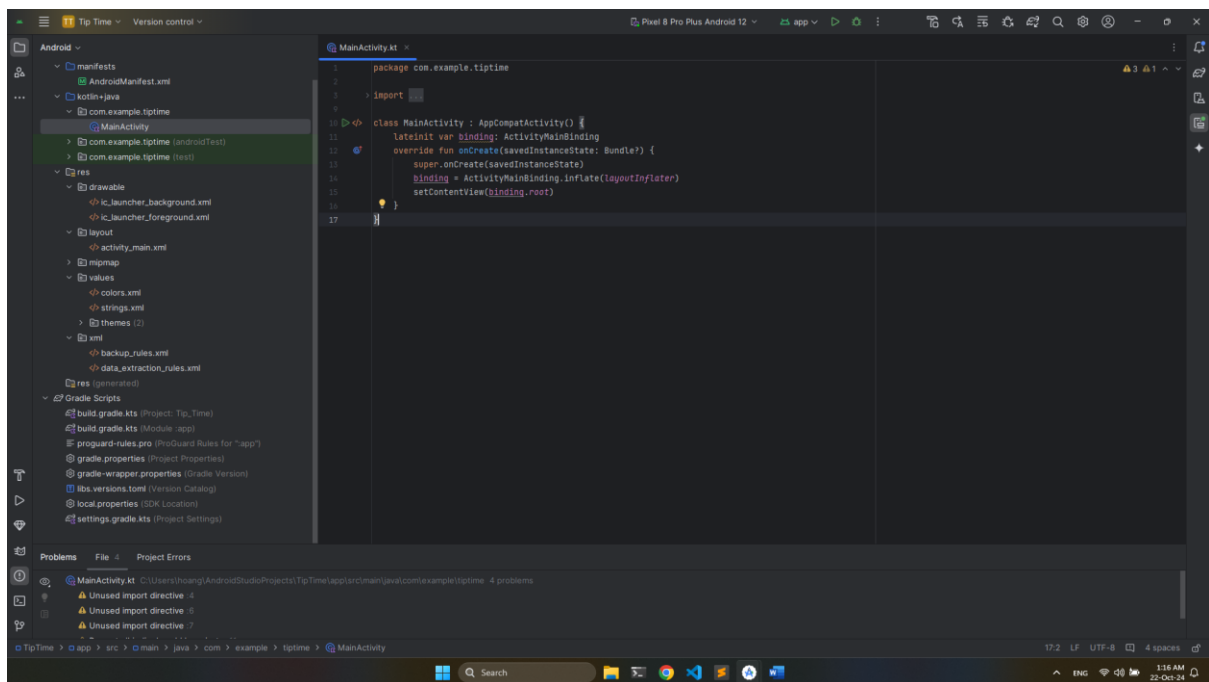
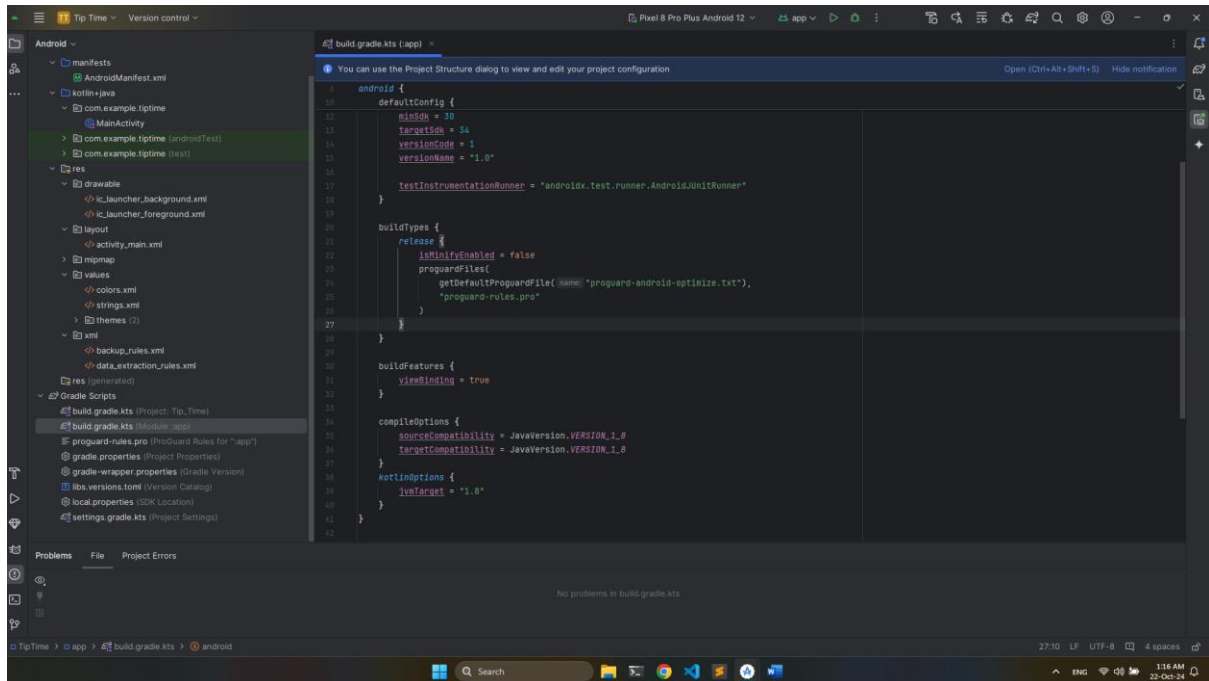
Complete view



Source code

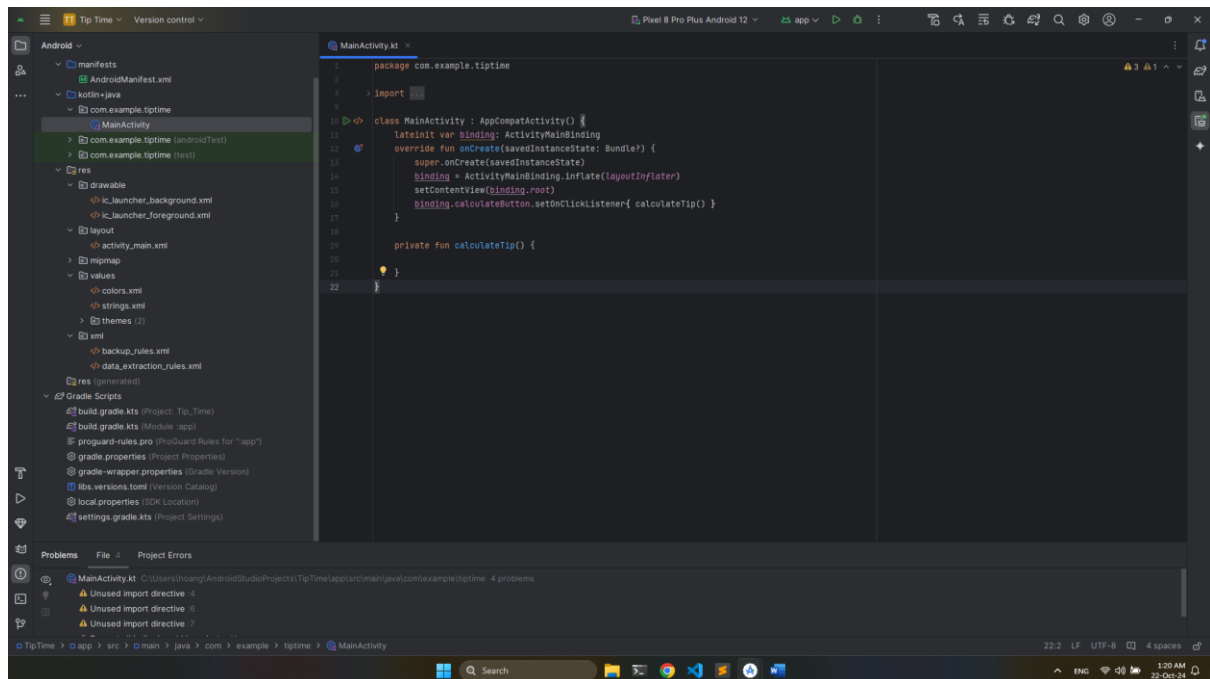
[activity_main.xml](#)

View Binding

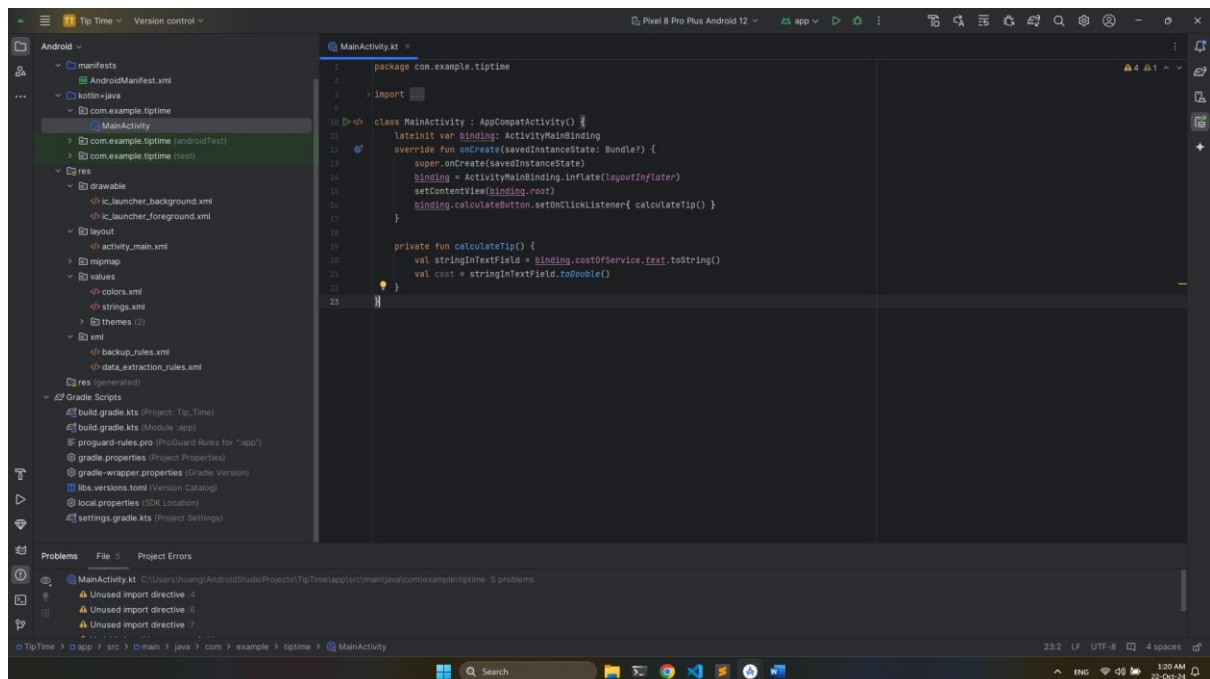


Calculate the tip

Add click listener to the button



Get the cost of service



The screenshot displays the Android Studio IDE interface. The top toolbar includes icons for Tip Time, Version control, Pixel 8 Pro Plus Android 12, app, and various development tools. The left sidebar shows the Project Explorer with the following structure:

- Android > manifests > AndroidManifest.xml
- Android > kotlin-jvm > com.example.tiptime > MainActivity (selected)
- Android > res > com.example.tiptime (AndroidTest)
- Android > res > com.example.tiptime (test)
- Android > res > drawable > ic_launcher_background.xml
- Android > res > drawable > ic_launcher_foreground.xml
- Android > res > layout > activity_main.xml
- Android > res > mipmap
- Android > res > values > colors.xml
- Android > res > values > strings.xml
- Android > res > themes (2)
- Android > res > xml > backup_rules.xml
- Android > res > xml > data_extraction_rules.xml
- Android > res (generated)
- Android > Gradle Scripts > build.gradle.kts (Project: TipTime)
- Android > Gradle Scripts > build.gradle.kts (Module: app)
- Android > Gradle Scripts > proguard-rules.pro (ProGuard Rules for "app")
- Android > Gradle Scripts > gradle.properties (Project Properties)
- Android > Gradle Scripts > gradle-wrapper.properties (Gradle Version)
- Android > Gradle Scripts > libs.versions.toml (Version Catalog)
- Android > Gradle Scripts > local.properties (IDE Location)
- Android > Gradle Scripts > settings.gradle.kts (Project Settings)

The main editor area shows the MainActivity.kt file with the following code:

```
1 package com.example.tiptime
2
3 import androidx.appcompat.app.AppCompatActivity
4
5 class MainActivity : AppCompatActivity() {
6     lateinit var binding: ActivityMainBinding
7     override fun onCreate(savedInstanceState: Bundle?) {
8         super.onCreate(savedInstanceState)
9         binding = ActivityMainBinding.inflate(layoutInflater)
10        setContentView(binding.root)
11        binding.calculateButton.setOnClickListener { calculateTip() }
12    }
13
14    private fun calculateTip() {
15        val stringIntTextField = binding.findViewById<TextView>{ R.id.text }
16        val cost = stringIntTextField.text?.toString()
17        val selectedId = binding.tipOptions.checkedRadioButtonId
18        val tipPercentage = when(selectedId) {
19            R.id.option_twenty_percent -> 0.20
20            R.id.option_eighteen_percent -> 0.18
21            else -> 0.15
22        }
23    }
24 }
```

The bottom toolbar shows the Problems, File, and Project Errors tabs. The Problems tab is active, showing the following errors:

- Unused import directive 4
- Unused import directive 6
- Unused import directive 7

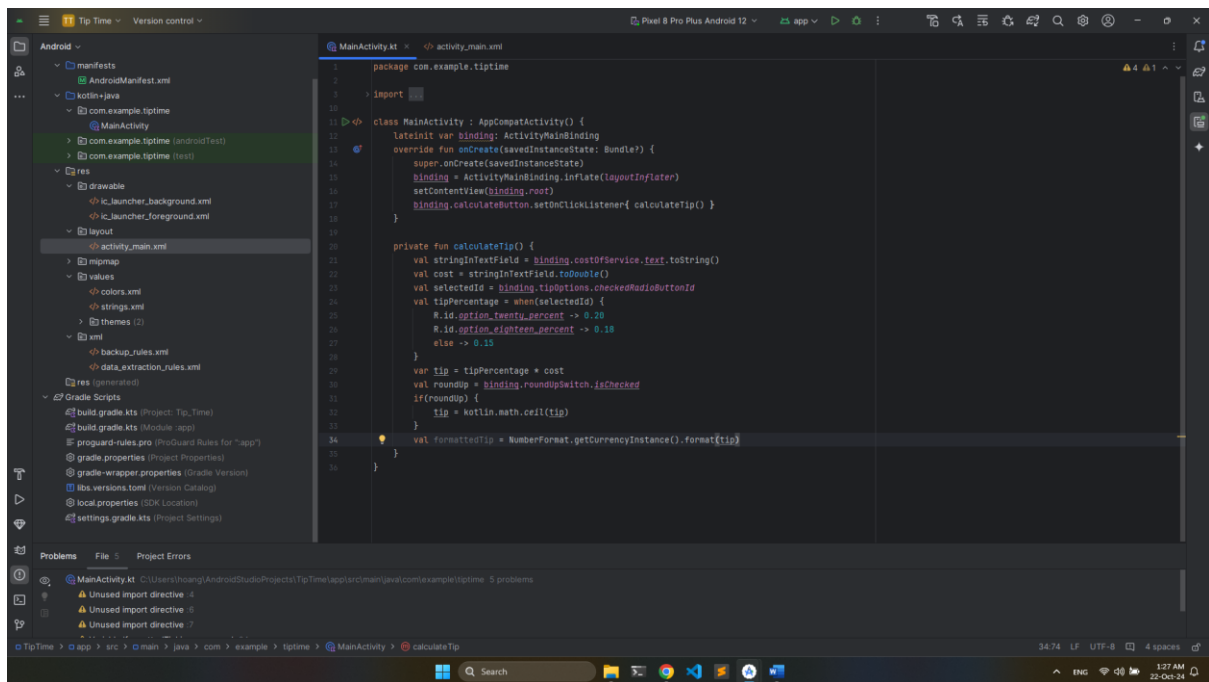
The status bar at the bottom indicates the current file is MainActivity.kt, the project is TipTime, and the IDE is running on a Pixel 8 Pro Plus Android 12 device. The bottom right corner shows the system clock as 1:22 AM on 22-Dec-24.

The screenshot shows the Android Studio IDE with the following components:

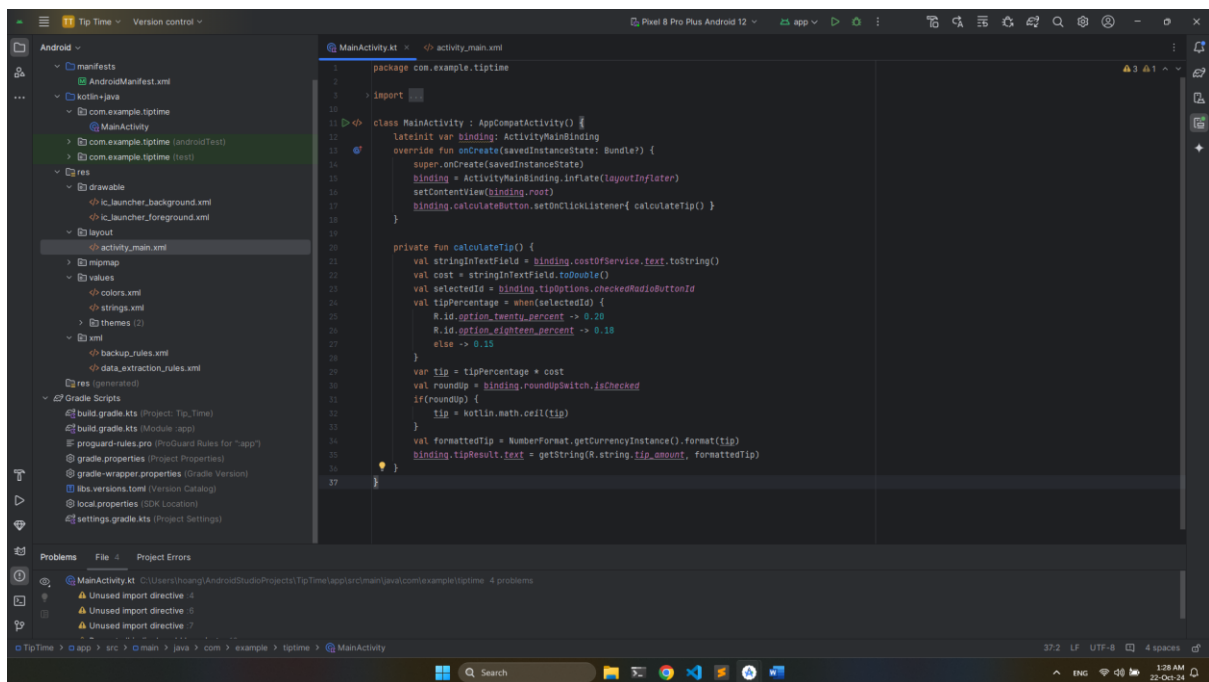
- Left Panel (Project Explorer):** Displays the project structure for 'TipTime'. It includes folders for 'manifests', 'kotlin+java', 'res', and 'Gradle Scripts'. The 'res' folder contains 'drawable', 'layout', 'mipmap', 'values', 'themes', and 'xml' subfolders. The 'Gradle Scripts' folder contains 'build.gradle.kts' (Project: TipTime), 'build.gradle.kts' (Module: app), 'proguard-rules.pro' (ProGuard Rules for "app"), 'gradle.properties' (Project: Properties), 'gradle-wrapper.properties' (Gradle Version), 'libs.versions.toml' (Version Catalog), 'local.properties' (SDK Location), and 'settings.gradle.kts' (Project Settings).
- Main Editor:** Displays the 'MainActivity.kt' file. The code is as follows:

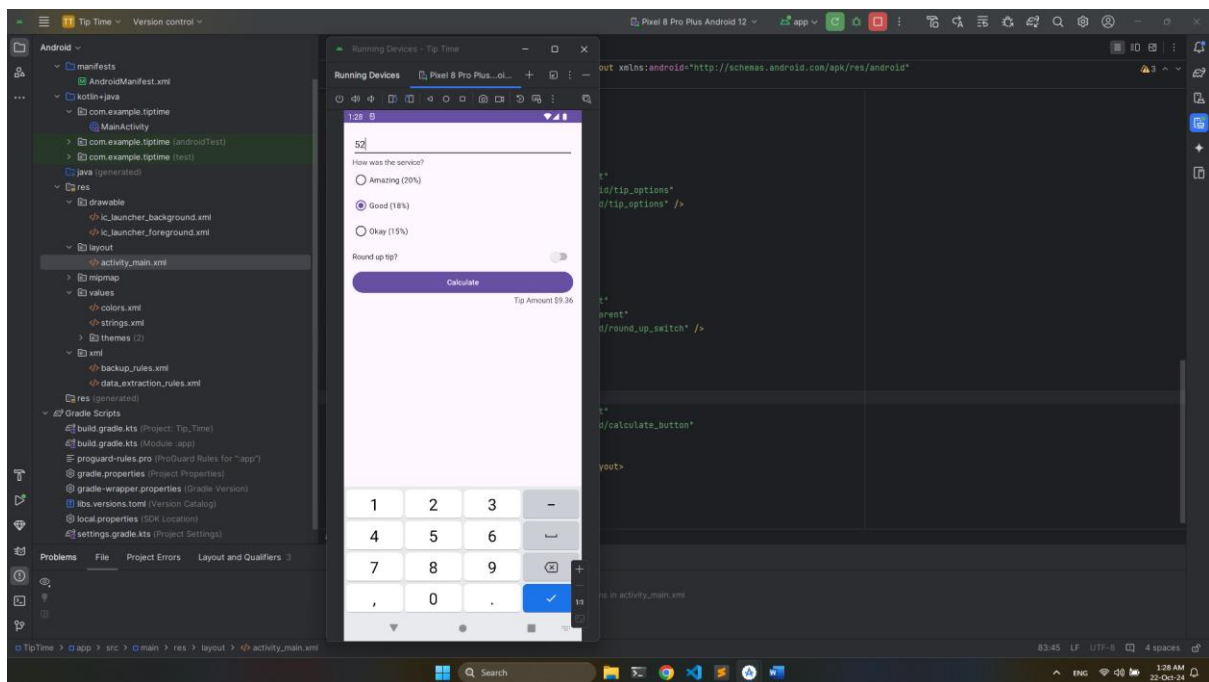
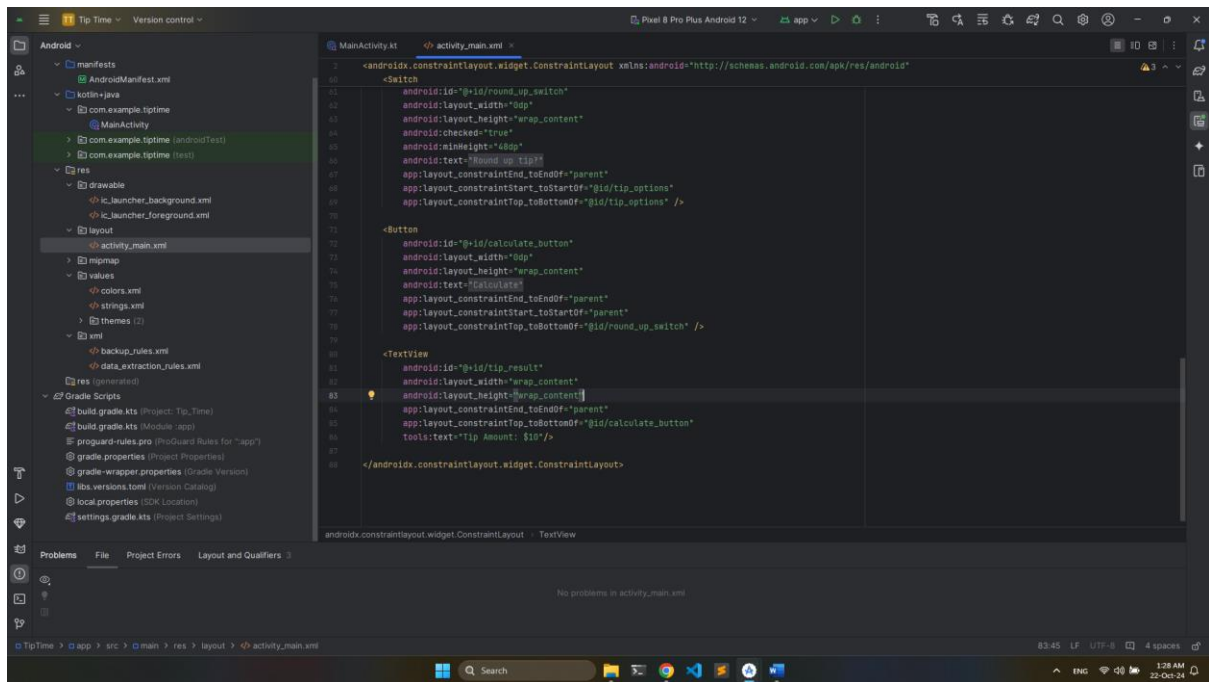

```
1 package com.example.tipTime
2
3 import androidx.appcompat.app.AppCompatActivity
4 import androidx.core.view.WindowCompat
5 import androidx.core.view.WindowInsetsCompat
6 import androidx.core.view.WindowInsetsControllerCompat
7 import androidx.core.view.WindowInsetsControllerCompat.MODE_TRANSIENT
8 import androidx.core.view.WindowInsetsControllerCompat.MODE_TRANSIENT
9 import androidx.core.view.WindowInsetsControllerCompat.MODE_TRANSIENT
10 import androidx.core.view.WindowInsetsControllerCompat.MODE_TRANSIENT
11
12 class MainActivity : AppCompatActivity() {
13     lateinit var binding: ActivityMainBinding
14     override fun onCreate(savedInstanceState: Bundle?) {
15         super.onCreate(savedInstanceState)
16         binding = ActivityMainBinding.inflate(layoutInflater)
17         setContentView(binding.root)
18         binding.calculateButton.setOnClickListener { calculateTip() }
19     }
20
21     private fun calculateTip() {
22         val stringInTextField = binding.costofServiceText.toString()
23         val cost = stringInTextField.toDouble()
24         val selectedId = binding.tipOptions.checkedRadioButtonId
25         val tipPercentage = when(selectedId) {
26             R.id.option_twenty_percent -> 0.20
27             R.id.option_eighteen_percent -> 0.18
28             else -> 0.15
29         }
30         var tip = tipPercentage * cost
31         val roundUp = binding.roundUpSwitch.isChecked
32         if(roundUp) {
33             tip = kotlin.math.ceil(tip)
34         }
35     }
36 }
```
- Bottom Panel (Problems):** Shows three errors:
 - Unused import directive: 4
 - Unused import directive: 8
 - Unused import directive: 7

Format the tip



Display the tip





Source code
[MainActivity.kt](#)