KBTU KAZAKH-BRITISH TECHNICAL UNIVERSITY

Assignment #1

Mobile Programming

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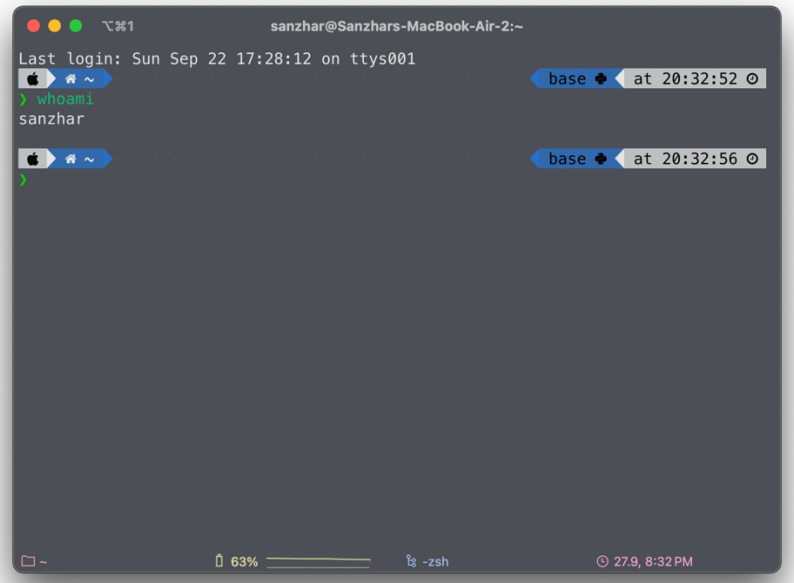
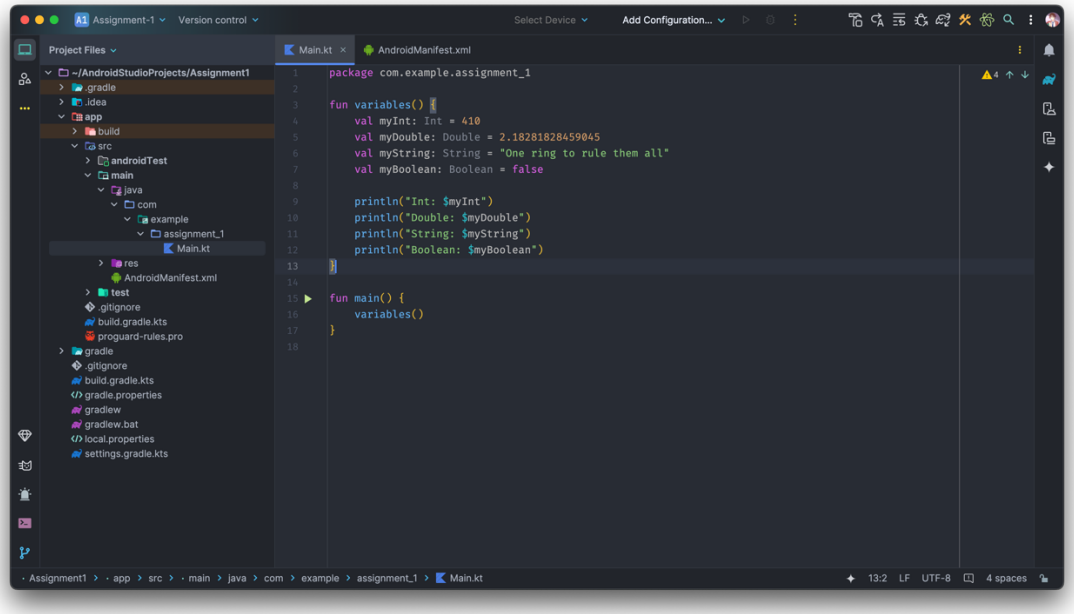
Checked by:
Serek A.

Almaty, 2024

Exercise 1: Kotlin Syntax Basics



1. **Variables and Data Types:**
   - Create variables of different data types: Int, Double, String, Boolean.



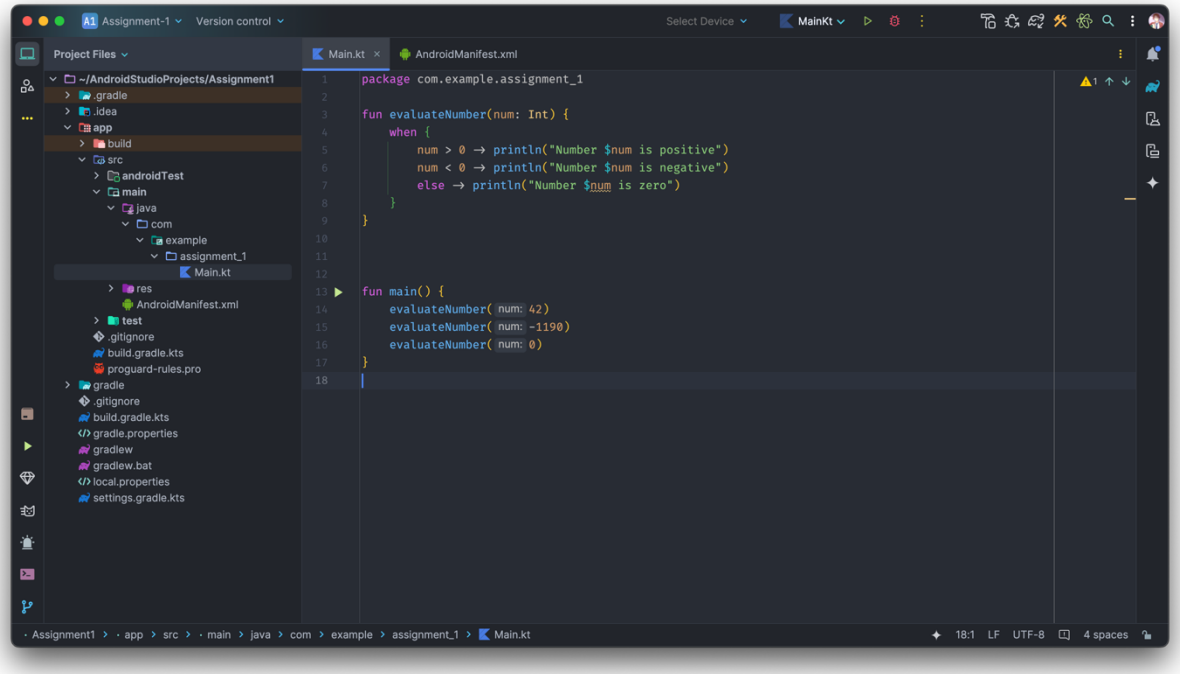
   - Print the variables using println.

```
Run  MainKt ×
"/Users/sanzhar/Applications/Android Studio.app/Contents/jbr/Contents/Home/bin/java" ...
Int: 410
Double: 2.18281828459045
String: One ring to rule them all
Boolean: false

Process finished with exit code 0
```

Conditional Statements:

- Create a simple program that checks if a number is positive, negative, or zero.

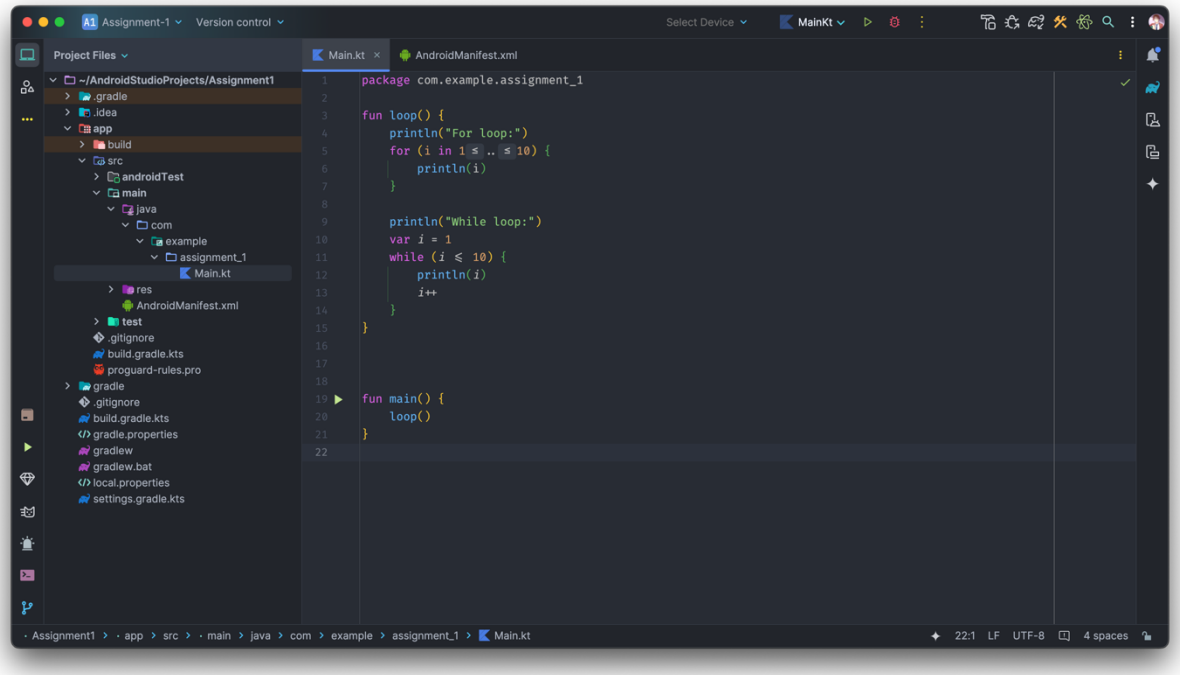


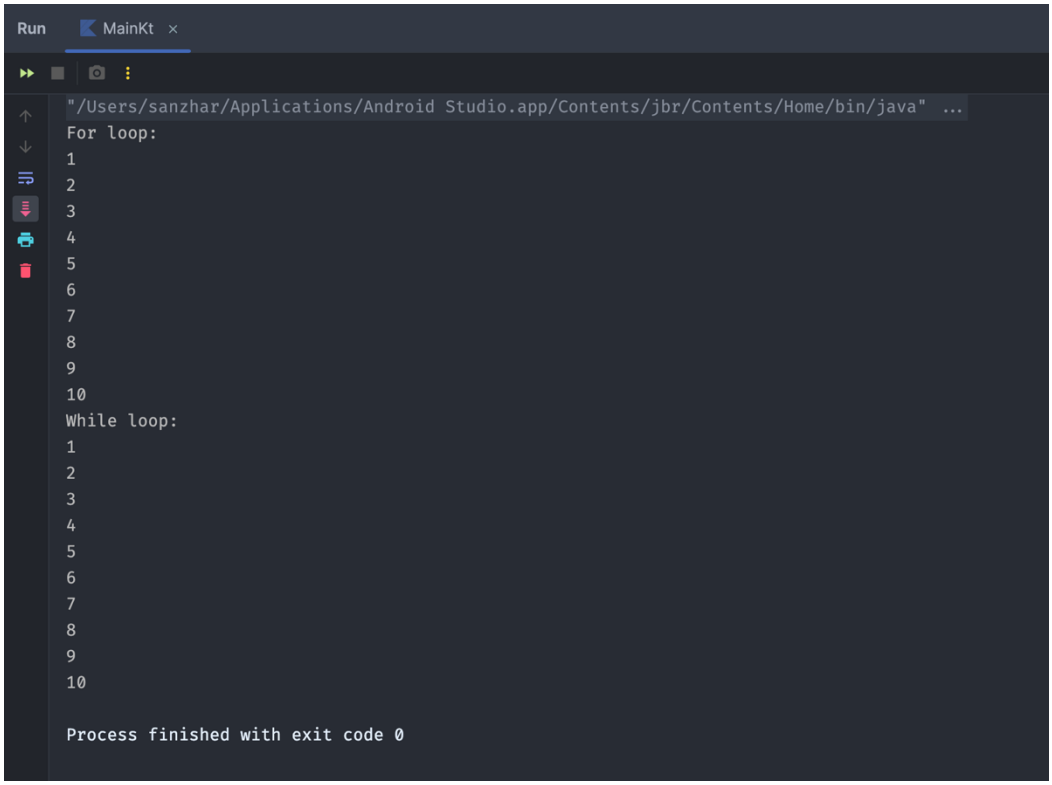

```
Run  MainKt ×
"/Users/sanzhar/Applications/Android Studio.app/Contents/jbr/Contents/Home/bin/java" ...
Number 42 is positive
Number -1190 is negative
Number 0 is zero

Process finished with exit code 0
```

Loops:

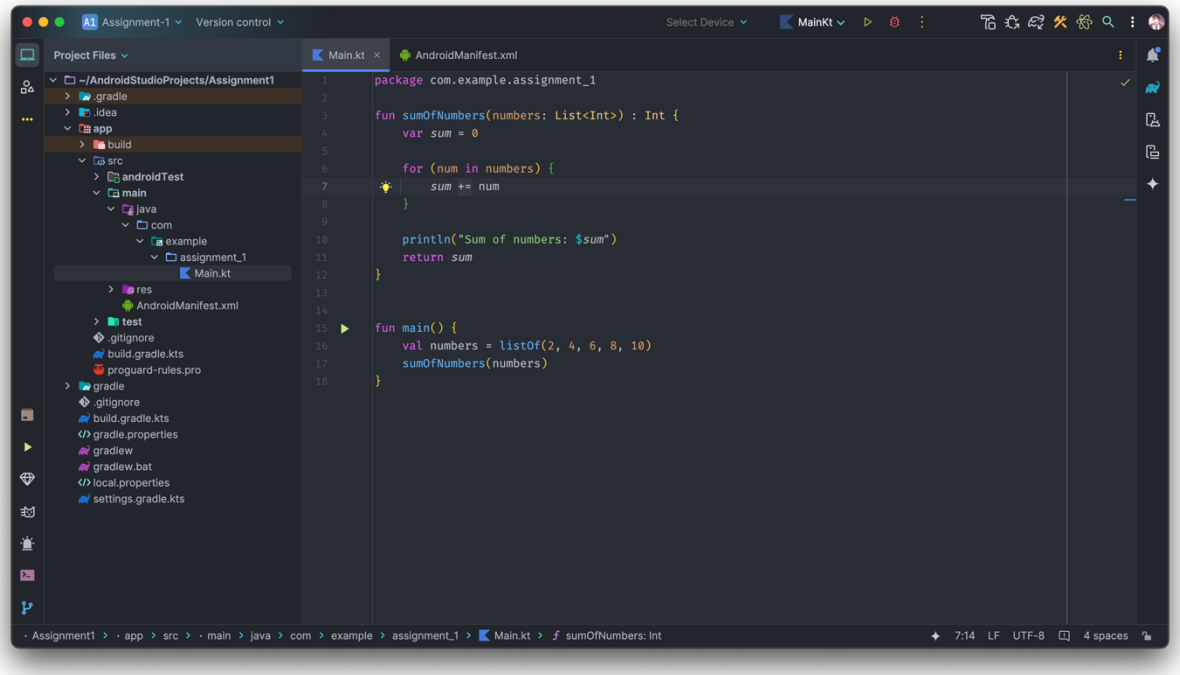
- Write a program that prints numbers from 1 to 10 using for and while loops

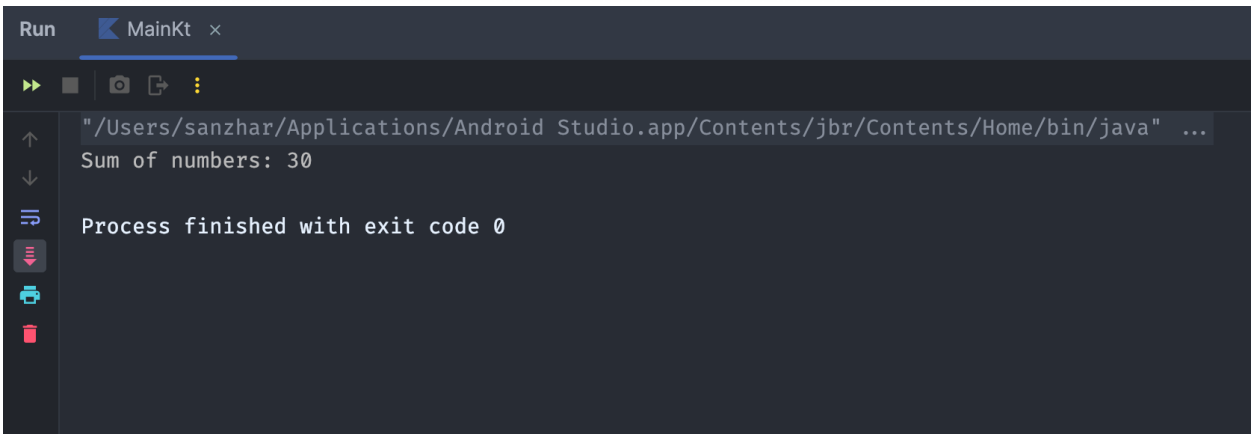




Collections:

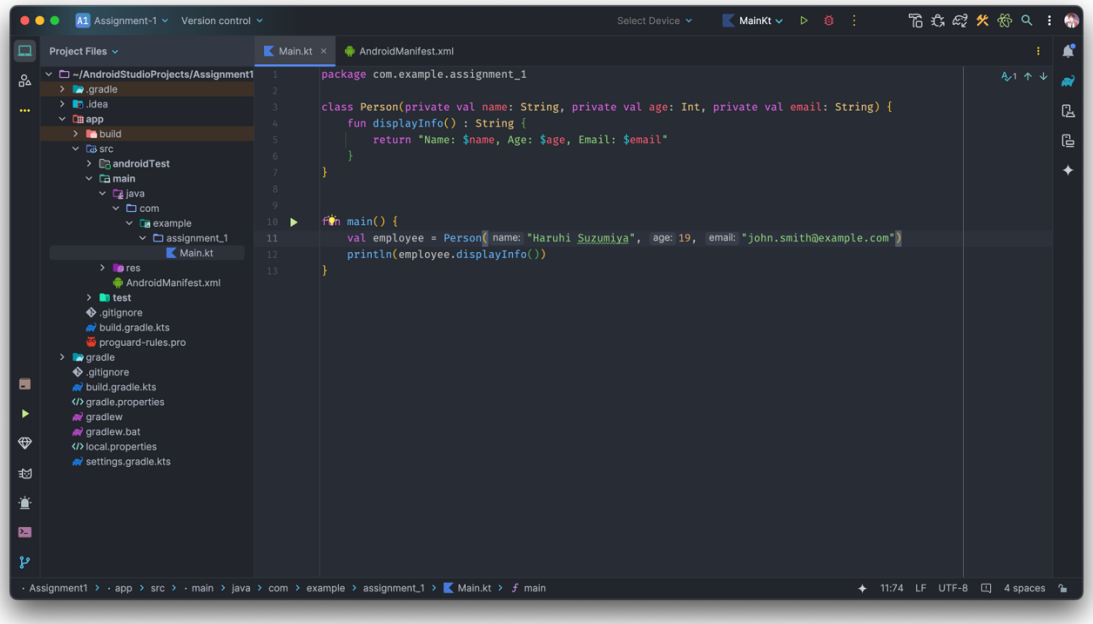
- Create a list of numbers, iterate through the list, and print the sum of all numbers.

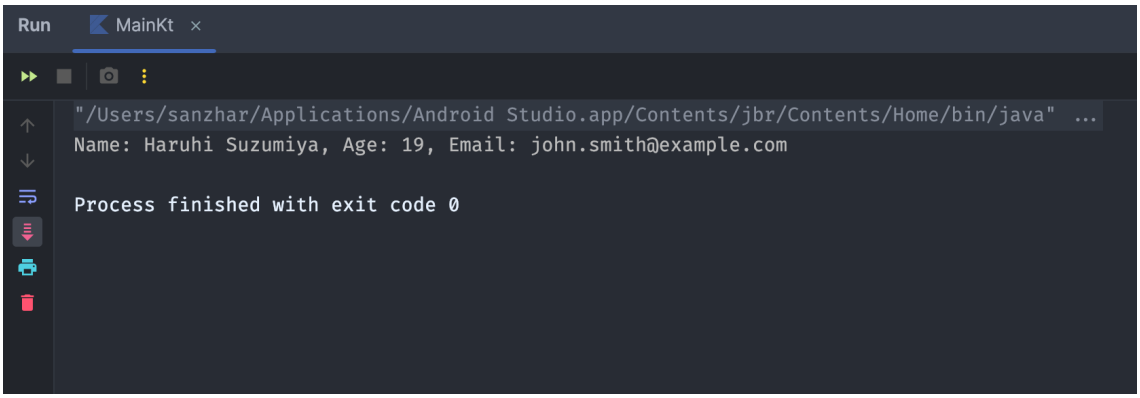




Exercise 2: Kotlin OOP (Object-Oriented Programming)

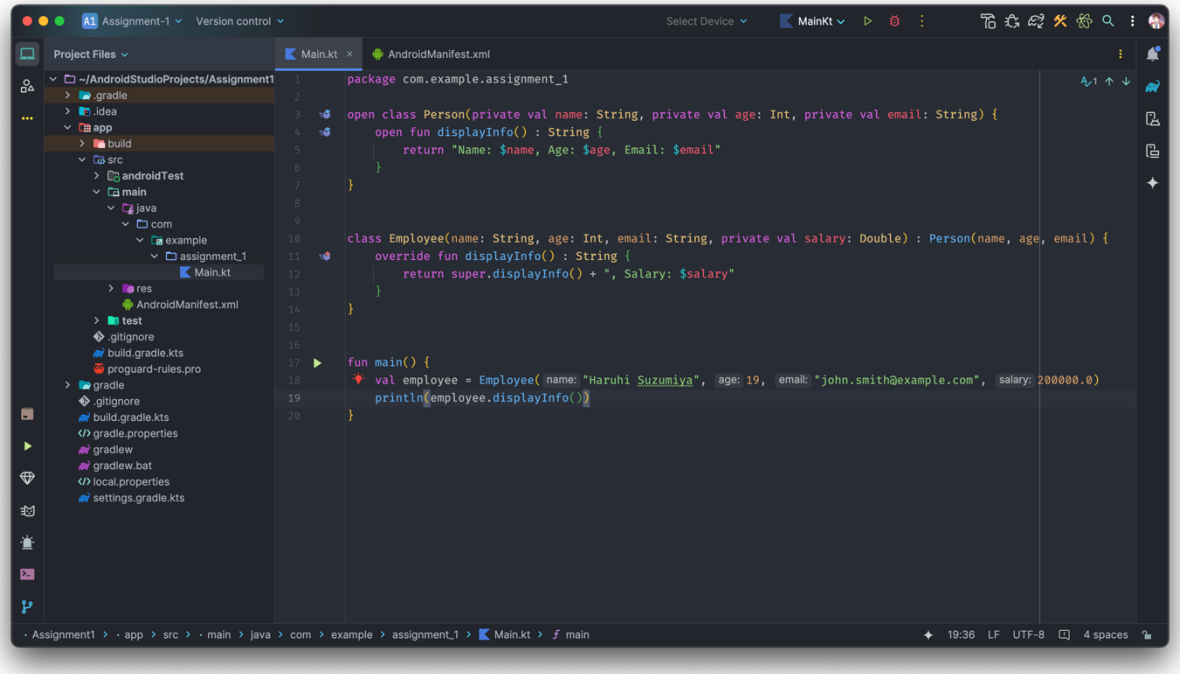
1. **Create a Person class:**
    - Define properties for name, age, and email.
    - Create a method to display the person's details.





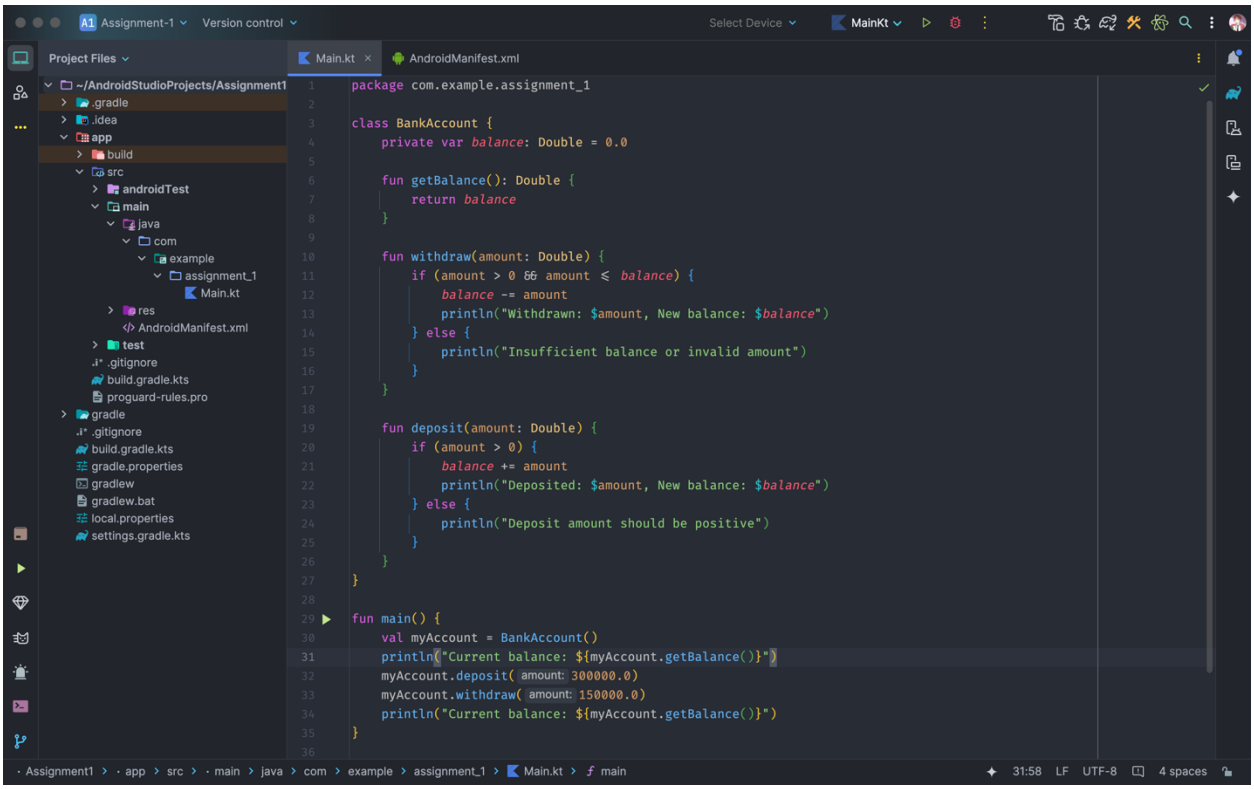
Inheritance:

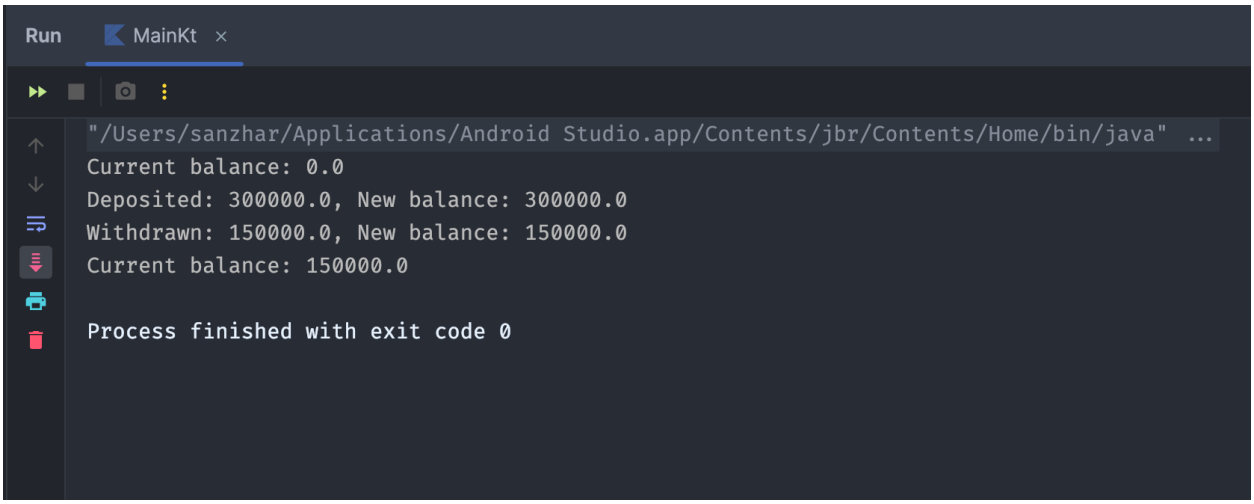
- Create a class Employee that inherits from the Person class.
- Add a property for salary.
- Override the displayInfo method to include the salary.



Encapsulation:

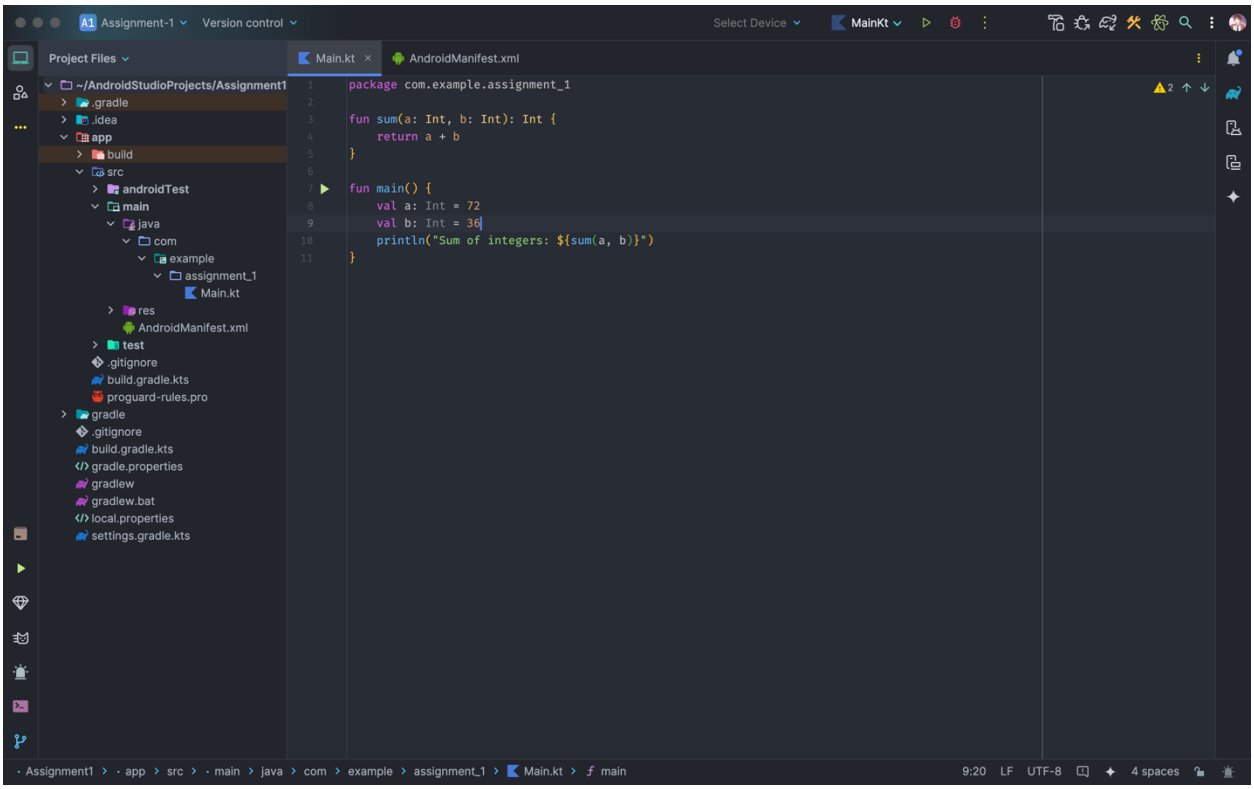
- Create a BankAccount class with a private property balance.
- Provide methods to deposit and withdraw money, ensuring the balance never goes negative.

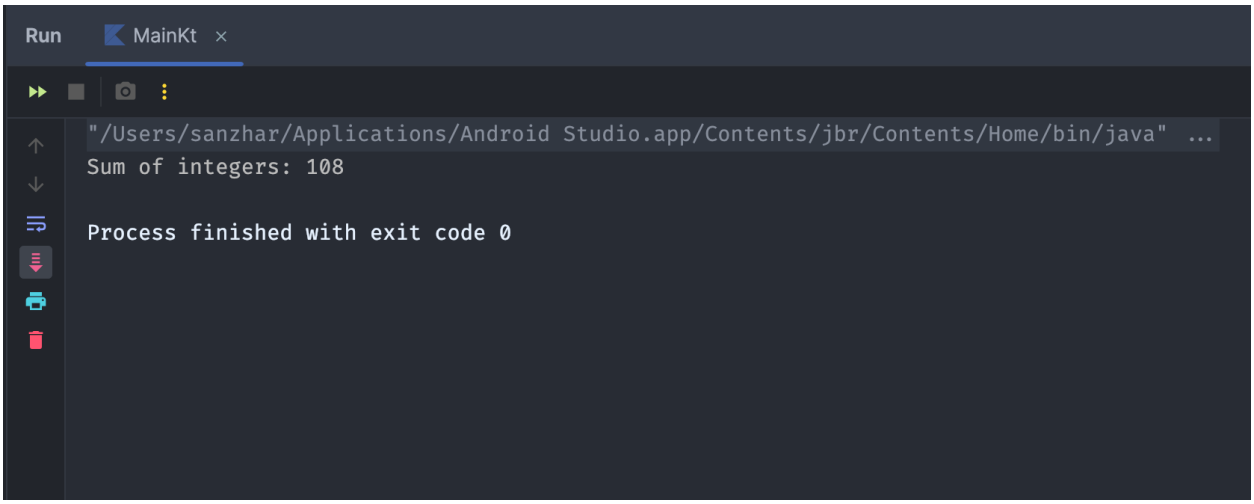




Exercise 3: Kotlin Functions

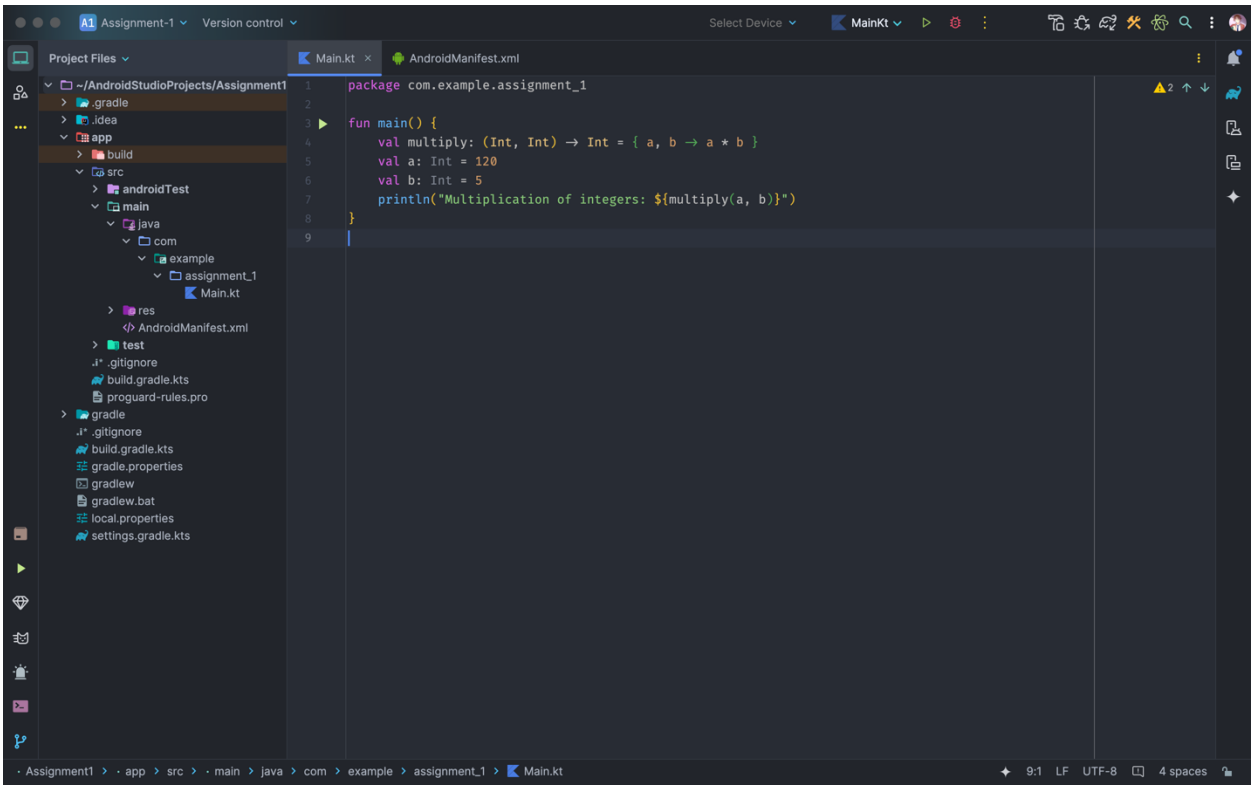
1. **Basic Function:**
   - Write a function that takes two integers as arguments and returns their sum

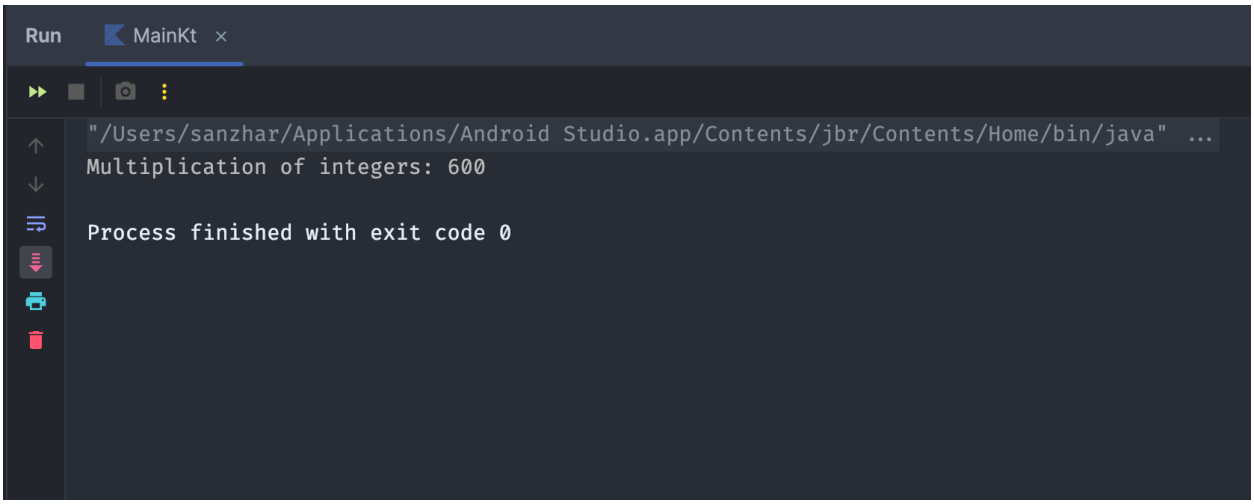




Lambda Functions:

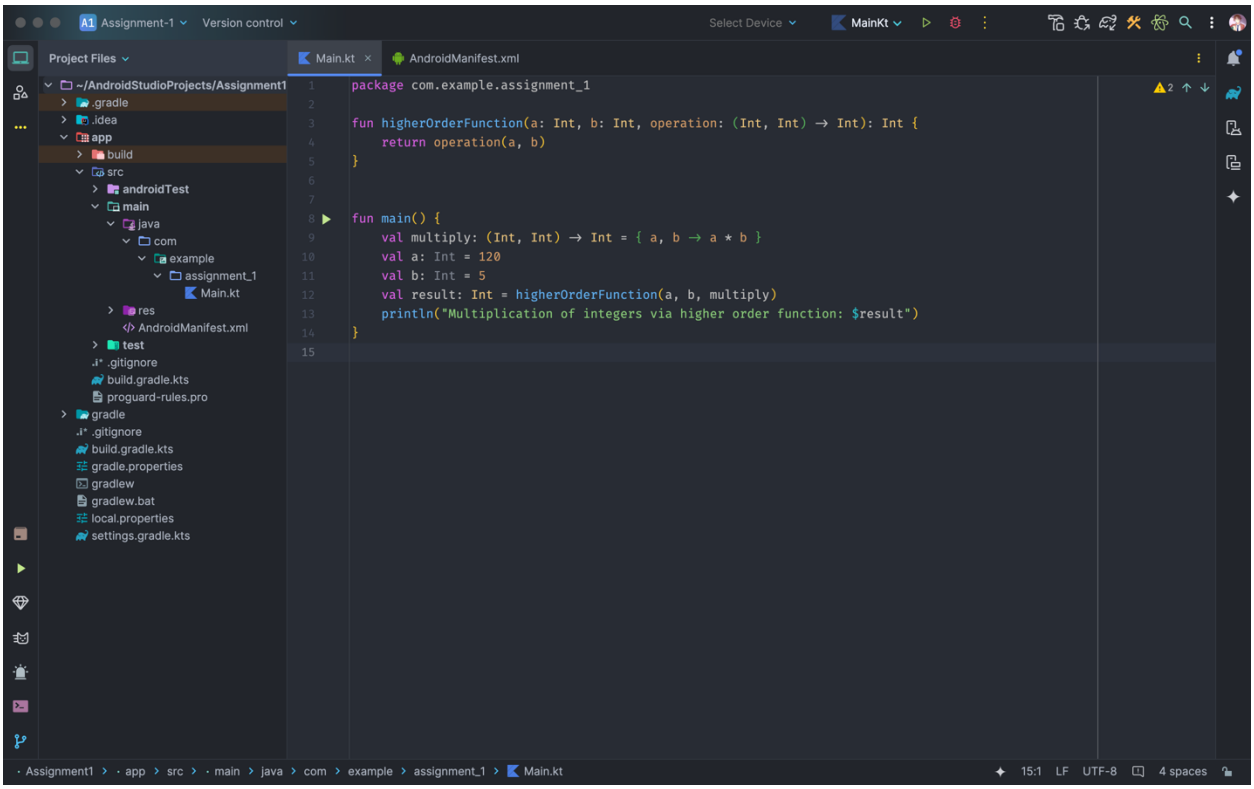
- Create a lambda function that multiplies two numbers and returns the result

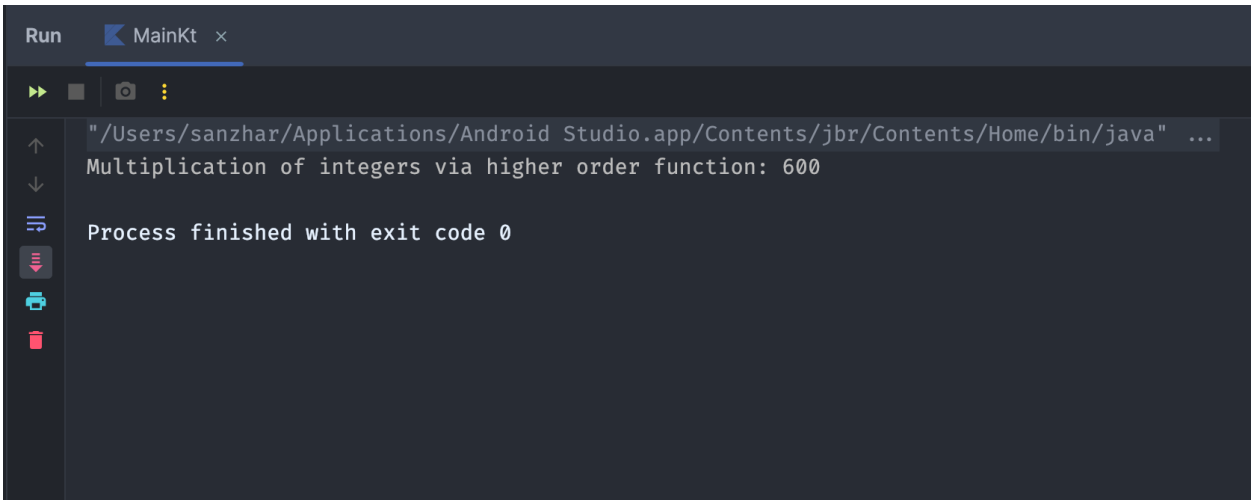




Higher-Order Functions:

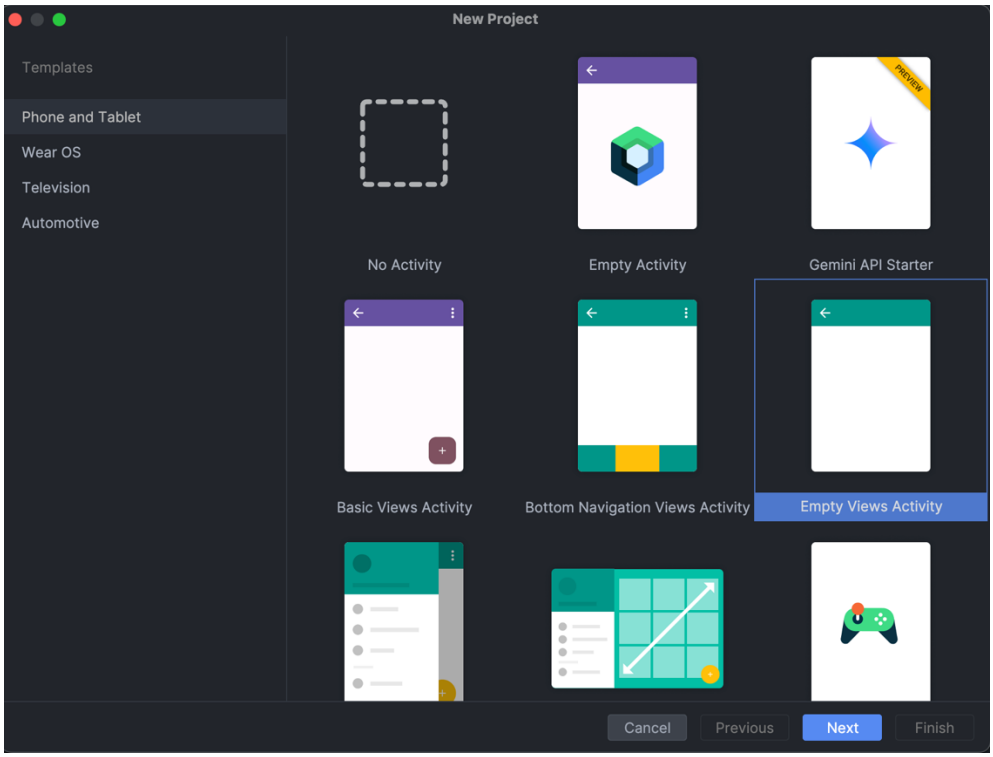
- Write a function that takes a lambda function as a parameter and applies it to two integers.



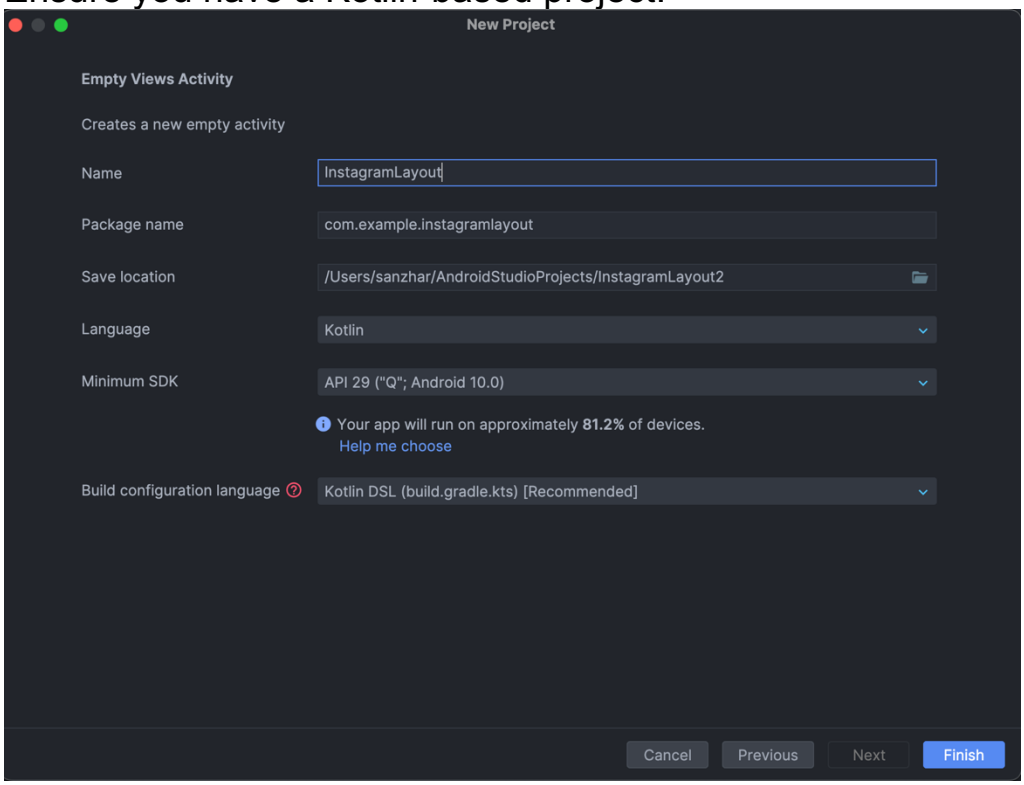


Exercise 4: Android Layout in Kotlin (Instagram-like Layout)

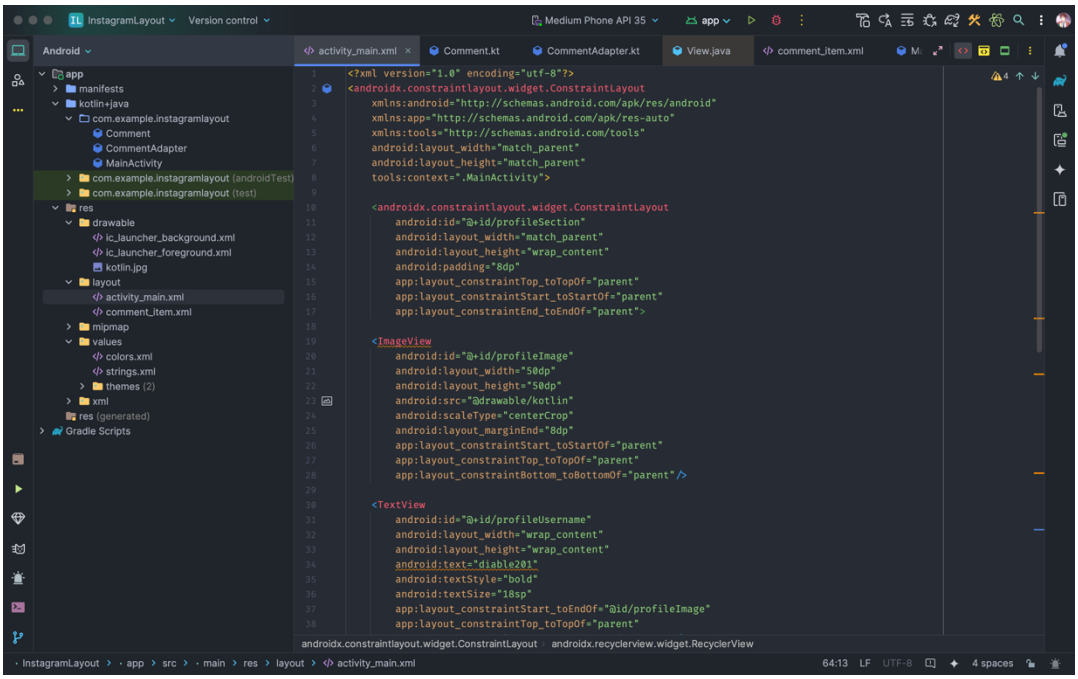
1. **Set Up the Android Project:**
    - Create a new Android project in Android Studio.



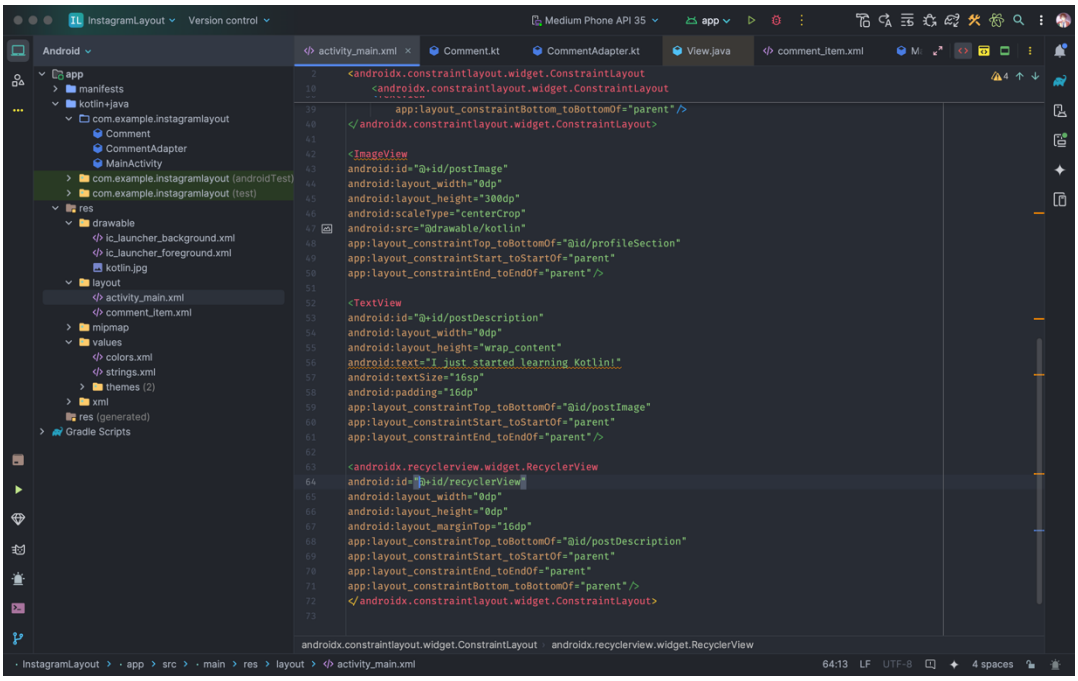
- Ensure you have a Kotlin-based project.



2. **Design the Layout:**
   - Create a new XML layout file (activity_main.xml) for a simple Instagram-like user interface.

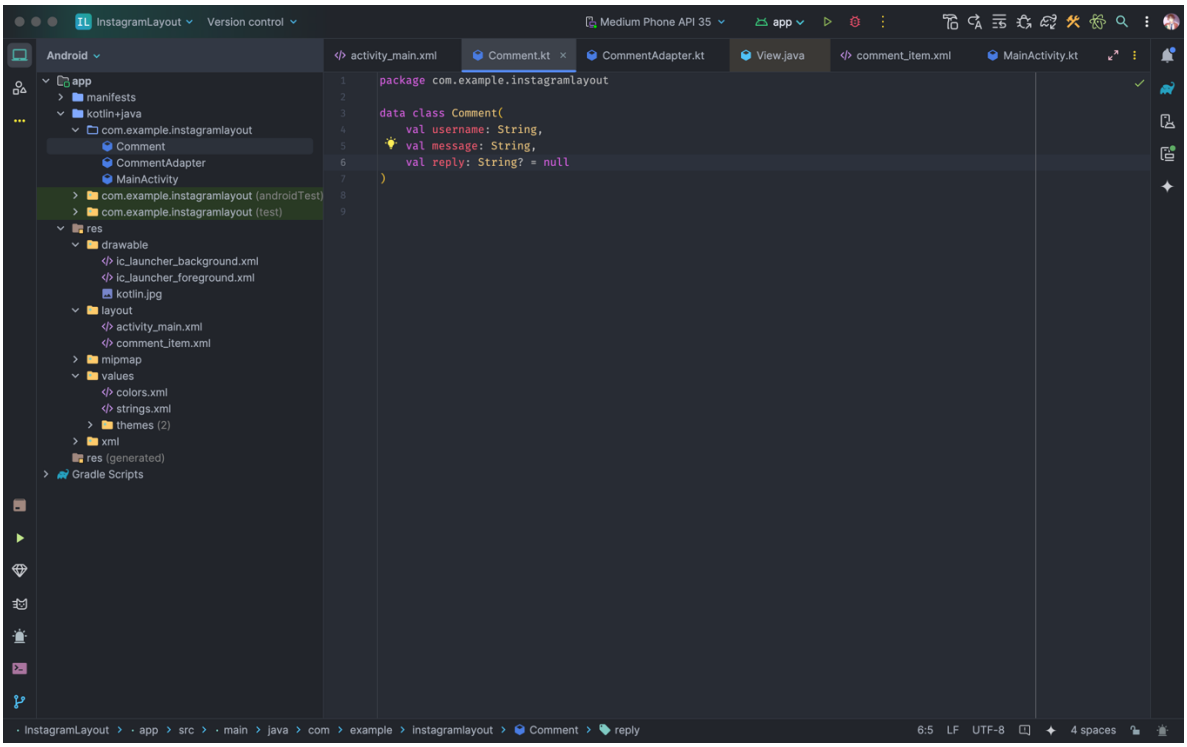


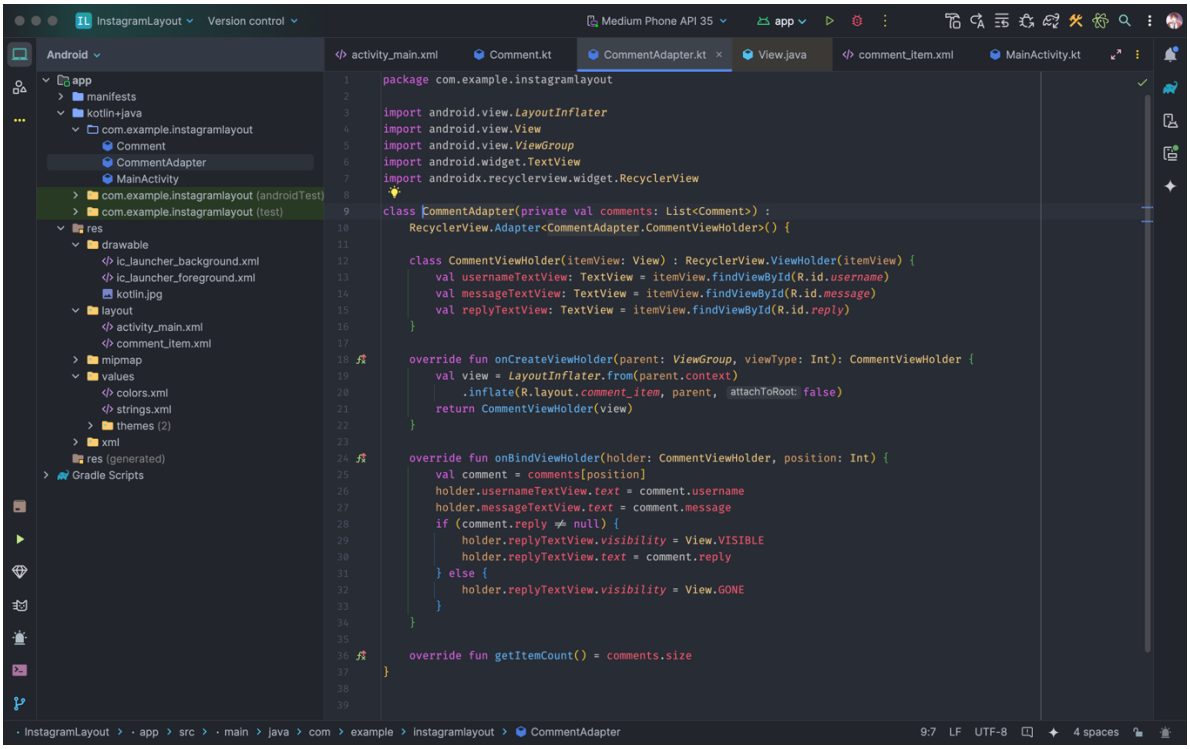
- Include elements like ImageView, TextView, and RecyclerView for the feed



Create the RecyclerView Adapter:

- Set up the RecyclerView to display a feed of posts with ImageView for the picture and TextView for the caption.


InstagramLayout
Version control
Medium Phone API 35
app
Android
activity_main.xml
Comment.kt
CommentAdapter.kt
View.java
comment_item.xml
MainActivity.kt
app
manifests
kotlin+java
com.example.instagramlayout
Comment
CommentAdapter
MainActivity
com.example.instagramlayout (androidTest)
com.example.instagramlayout (test)
res
drawable
ic_launcher_background.xml
ic_launcher_foreground.xml
kotlin.jpg
layout
activity_main.xml
comment_item.xml
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
package com.example.instagramlayout
data class Comment(
val username: String,
val message: String,
val reply: String? = null
)
InstagramLayout › app › src › main › java › com › example › instagramlayout › Comment › reply
6:5
LF
UTF-8
4 spaces


InstagramLayout
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app
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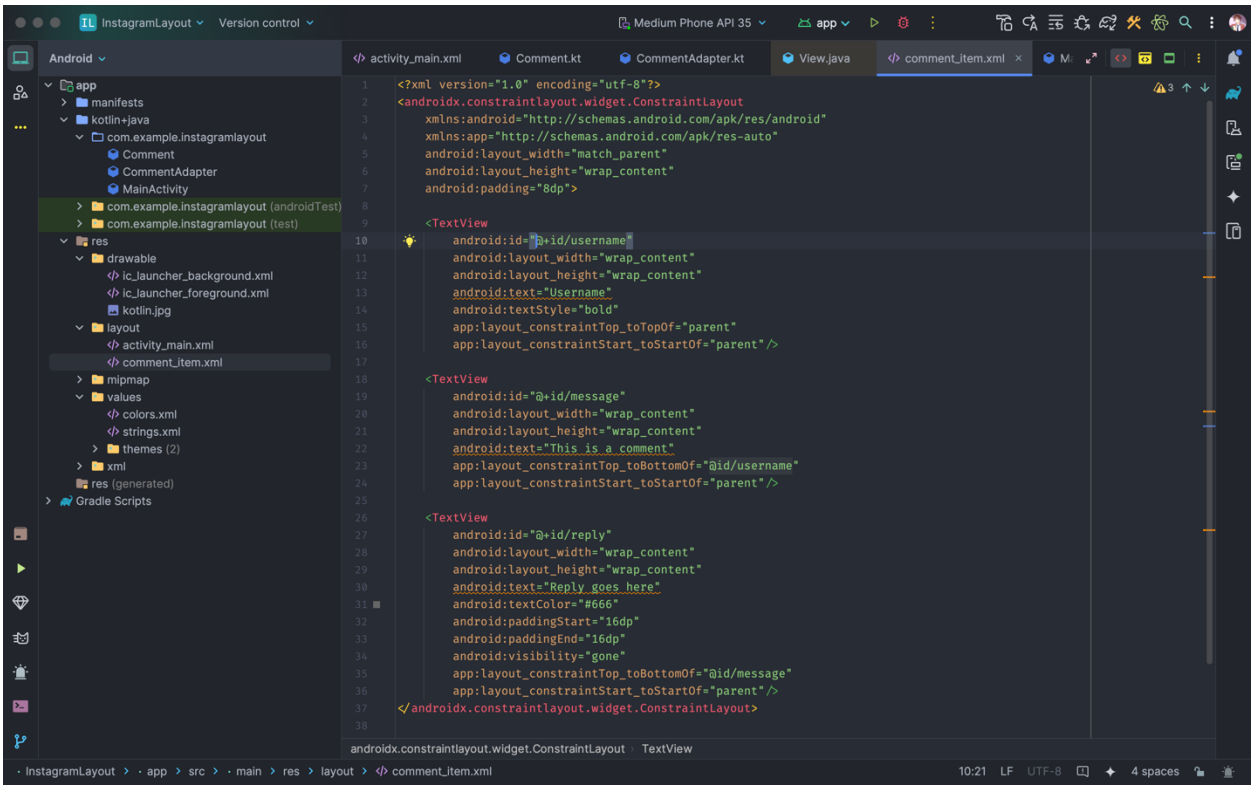
activity_main.xml
Comment.kt
CommentAdapter.kt
View.java
comment_item.xml
MainActivity.kt
app
manifests
kotlin+java
com.example.instagramlayout
Comment
CommentAdapter
MainActivity
com.example.instagramlayout (androidTest)
com.example.instagramlayout (test)
res
drawable
ic_launcher_background.xml
ic_launcher_foreground.xml
kotlin.jpg
layout
activity_main.xml
comment_item.xml
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
package com.example.instagramlayout
import android.view.LayoutInflater
import android.view.View
import android.view.ViewGroup
import android.widget.TextView
import androidx.recyclerview.widget.RecyclerView
class CommentAdapter(private val comments: List<Comment>) :
RecyclerView.Adapter<CommentAdapter.CommentViewHolder>() {
class CommentViewHolder(itemView: View) : RecyclerView.ViewHolder(itemView) {
val usernameTextView: TextView = itemView.findViewById(R.id.username)
val messageTextView: TextView = itemView.findViewById(R.id.message)
val replyTextView: TextView = itemView.findViewById(R.id.reply)
}
override fun onCreateViewHolder(parent: ViewGroup, viewType: Int): CommentViewHolder {
val view = LayoutInflater.from(parent.context)
.inflate(R.layout.comment_item, parent, attachToRoot: false)
return CommentViewHolder(view)
}
override fun onBindViewHolder(holder: CommentViewHolder, position: Int) {
val comment = comments[position]
holder.usernameTextView.text = comment.username
holder.messageTextView.text = comment.message
if (comment.reply != null) {
holder.replyTextView.visibility = View.VISIBLE
holder.replyTextView.text = comment.reply
} else {
holder.replyTextView.visibility = View.GONE
}
}
override fun getItemCount() = comments.size
}
InstagramLayout › app › src › main › java › com › example › instagramlayout › CommentAdapter
9:7
LF
UTF-8
4 spaces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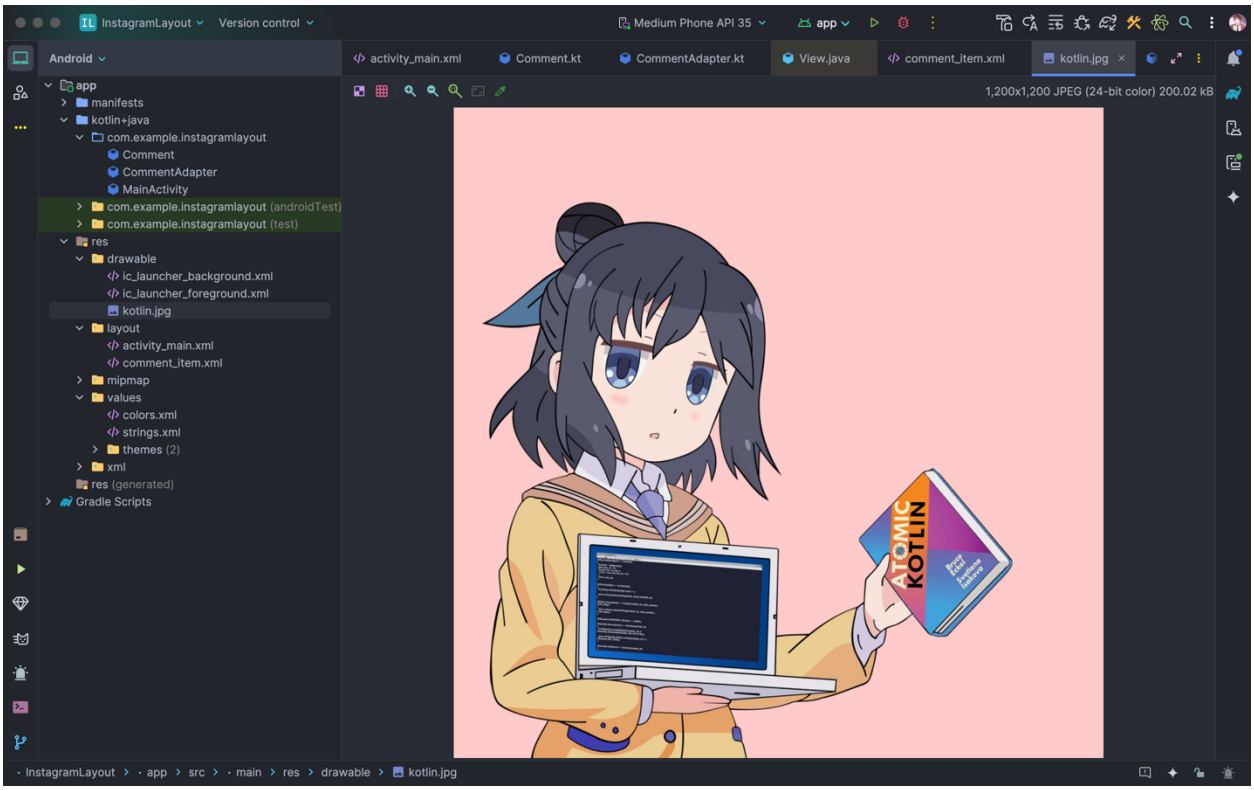
Comment
CommentAdapter
MainActivity
com.example.instagramlayout (androidTest)
com.example.instagramlayout (test)
res
drawable
ic_launcher_background.xml
ic_launcher_foreground.xml
kotlin.jpg
layout
activity_main.xml
comment_item.xml
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
<?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"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:padding="8dp">
<TextView
android:id="@+id/username"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Username"
android:textStyle="bold"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintStart_toStartOf="parent" />
<TextView
android:id="@+id/message"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="This is a comment"
app:layout_constraintTop_toBottomOf="@id/username"
app:layout_constraintStart_toStartOf="parent" />
<TextView
android:id="@+id/reply"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Reply goes here"
android:textColor="#666"
android:paddingStart="16dp"
android:paddingEnd="16dp"
android:visibility="gone"
app:layout_constraintTop_toBottomOf="@id/message"
app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
androidx.constraintlayout.widget.ConstraintLayout
TextView
InstagramLayout
app
src
main
res
layout
comment_item.xml
10:21
LF
UTF-8
4 spaces


InstagramLayout
Version control
Medium Phone API 35
app
Android
activity_main.xml
Comment.kt
CommentAdapter.kt
View.java
comment_item.xml
kotlin.jpg
1,200x1,200 JPEG (24-bit color) 200.02 kB
app
manifests
kotlin+java
com.example.instagramlayout
Comment
CommentAdapter
MainActivity
com.example.instagramlayout (androidTest)
com.example.instagramlayout (test)
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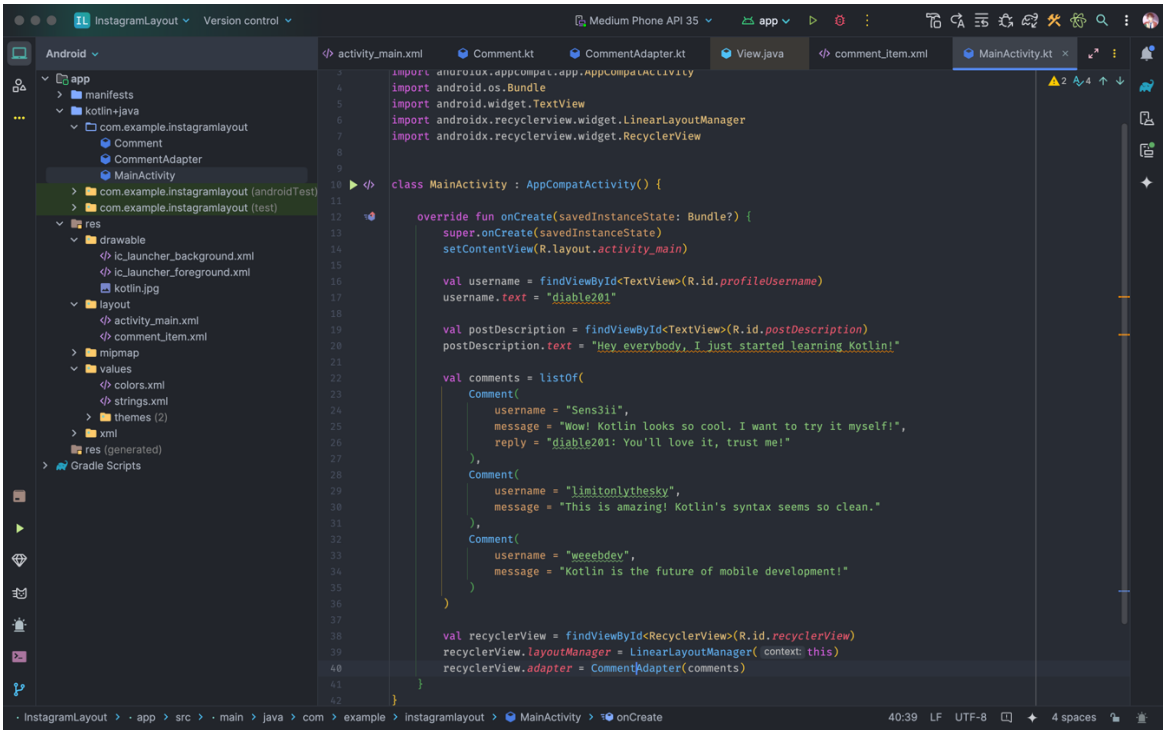
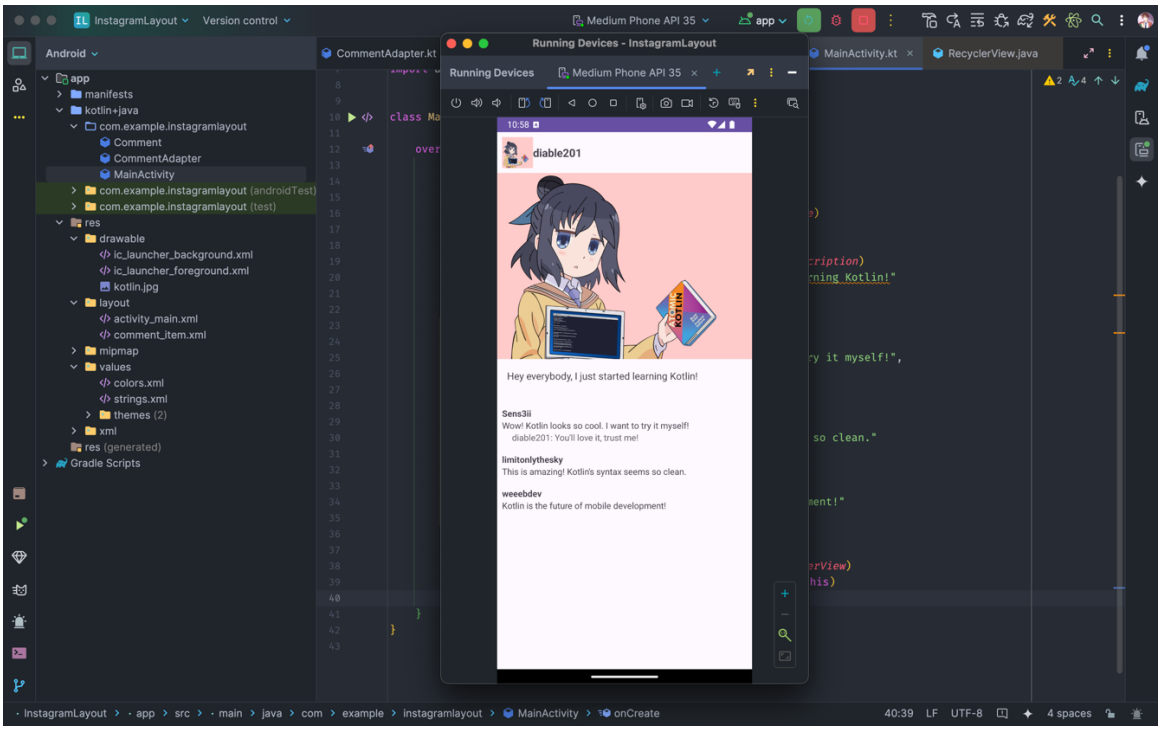
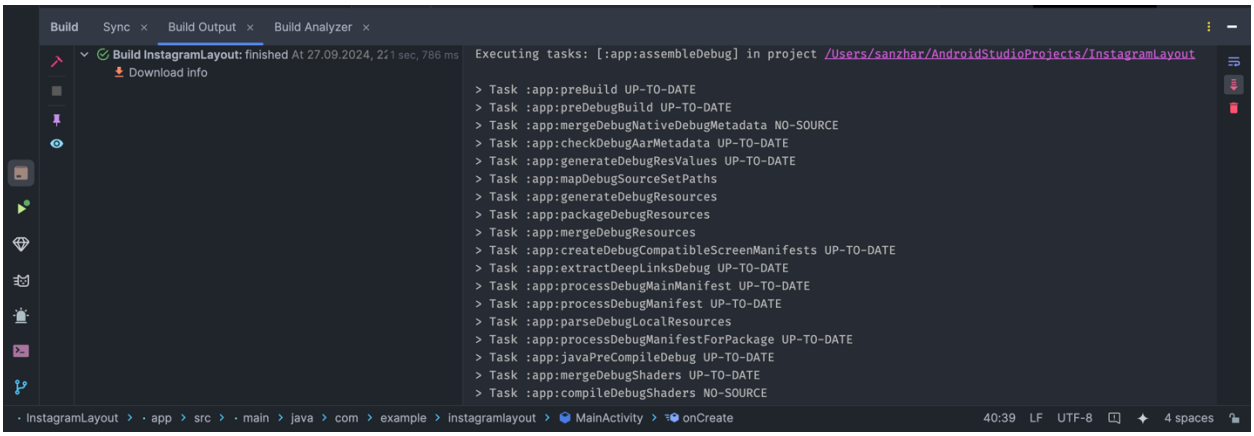
drawable
ic_launcher_background.xml
ic_launcher_foreground.xml
kotlin.jpg
layout
activity_main.xml
comment_item.xml
mipmap
values
colors.xml
strings.xml
themes (2)
xml
res (generated)
Gradle Scripts
ATOMIC
KOTLIN
InstagramLayout
app
src
main
res
drawable
kotlin.jpg

MainActivity Setup:

- Initialize the RecyclerView in MainActivity and populate it with sample data






Build
Sync
Build Output
Build Analyzer
Build InstagramLayout: finished At 27.09.2024, 21 sec, 786 ms
Download info
Executing tasks: [:app:assembleDebug] in project /Users/sanzhar/AndroidStudioProjects/InstagramLayout
> Task :app:preBuild UP-TO-DATE
> Task :app:preDebugBuild UP-TO-DATE
> Task :app:mergeDebugNativeDebugMetadata NO-SOURCE
> Task :app:checkDebugAarMetadata UP-TO-DATE
> Task :app:generateDebugResValues UP-TO-DATE
> Task :app:mapDebugSourceSetPaths
> Task :app:generateDebugResources
> Task :app:packageDebugResources
> Task :app:mergeDebugResources
> Task :app:createDebugCompatibleScreenManifests UP-TO-DATE
> Task :app:extractDeepLinksDebug UP-TO-DATE
> Task :app:processDebugMainManifest UP-TO-DATE
> Task :app:processDebugManifest UP-TO-DATE
> Task :app:parseDebugLocalResources
> Task :app:processDebugManifestForPackage UP-TO-DATE
> Task :app:javaPreCompileDebug UP-TO-DATE
> Task :app:mergeDebugShaders UP-TO-DATE
> Task :app:compileDebugShaders NO-SOURCE
InstagramLayout
app
src
main
java
com
example
instagramlayout
MainActivity
onCreate
40:39
LF
UTF-8
4 spaces