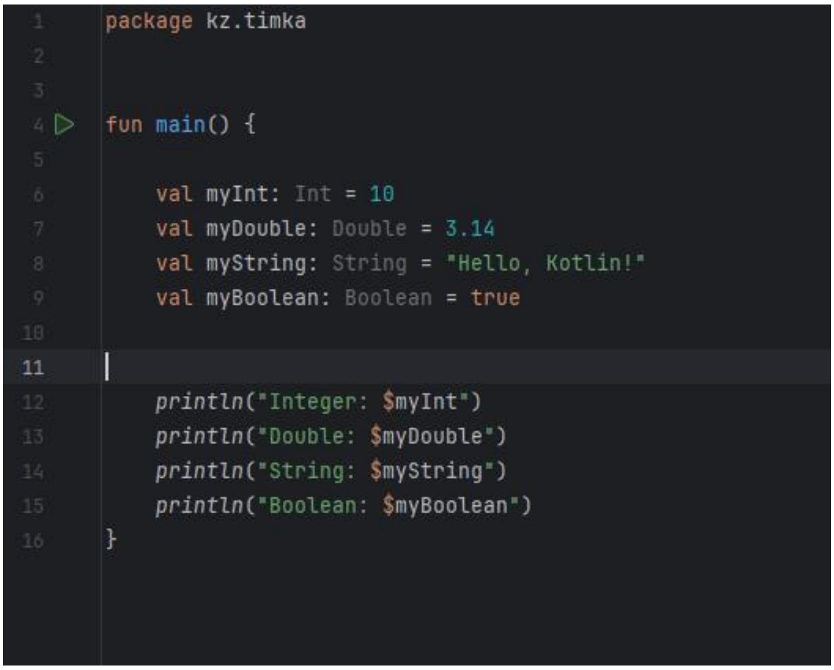
# Assignment 1, Mobile programming

## Amanzhol Temirbolat (23MD0382)

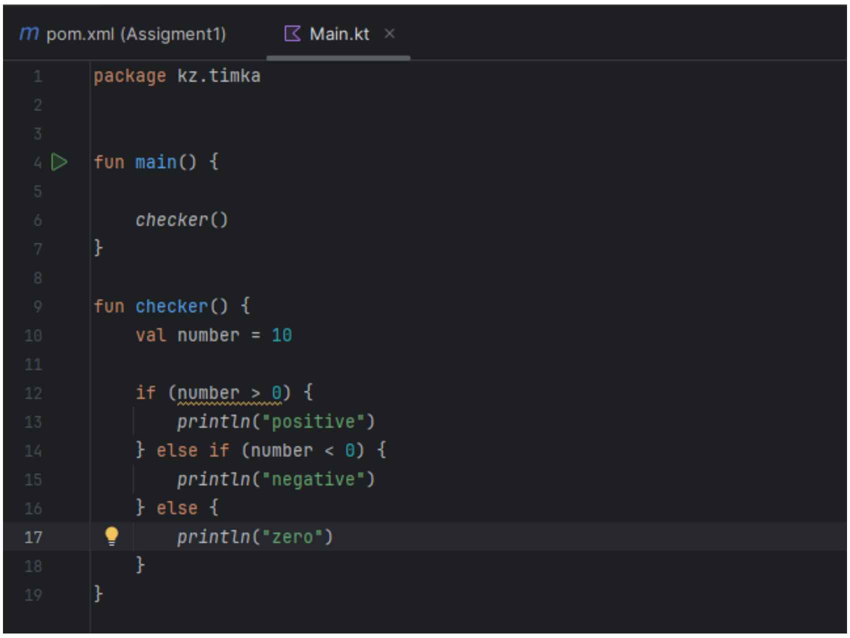
## Exercise 1: Kotlin Syntax Basics

### Variables and Data Types:



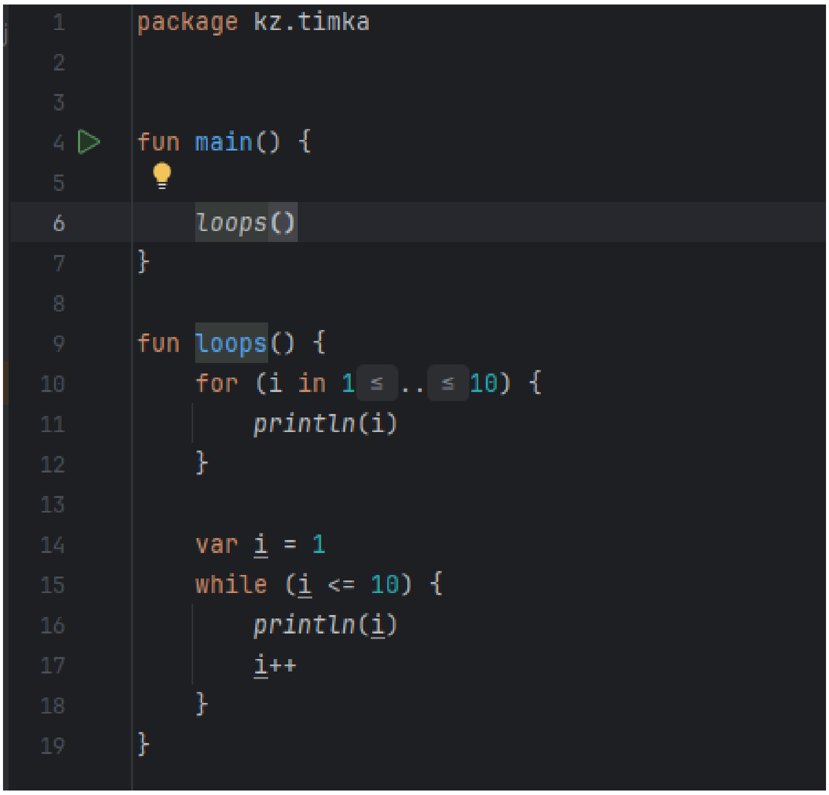
```kotlin
package kz.timka


fun main() {

    val myInt: Int = 10
    val myDouble: Double = 3.14
    val myString: String = "Hello, Kotlin!"
    val myBoolean: Boolean = true


    println("Integer: $myInt")
    println("Double: $myDouble")
    println("String: $myString")
    println("Boolean: $myBoolean")
}
```

### Conditional Statements:



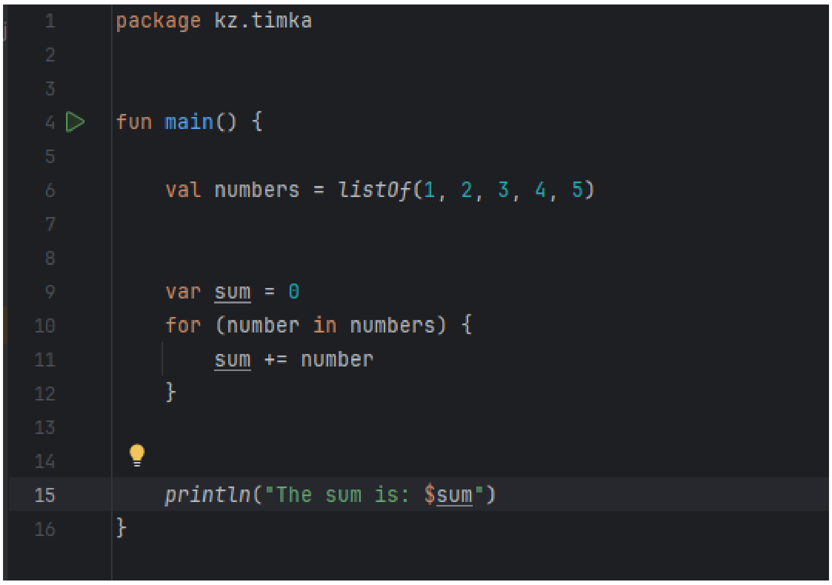
```kotlin
package kz.timka


fun main() {

    checker()
}

fun checker() {
    val number = 10

    if (number > 0) {
        println("positive")
    } else if (number < 0) {
        println("negative")
    } else {
        println("zero")
    }
}
```

### Loops:



```
package kz.timka


fun main() {

    loops()
}

fun loops() {
    for (i in 1 ≤ .. ≤ 10) {
        println(i)
    }

    var i = 1
    while (i <= 10) {
        println(i)
        i++
    }
}
```

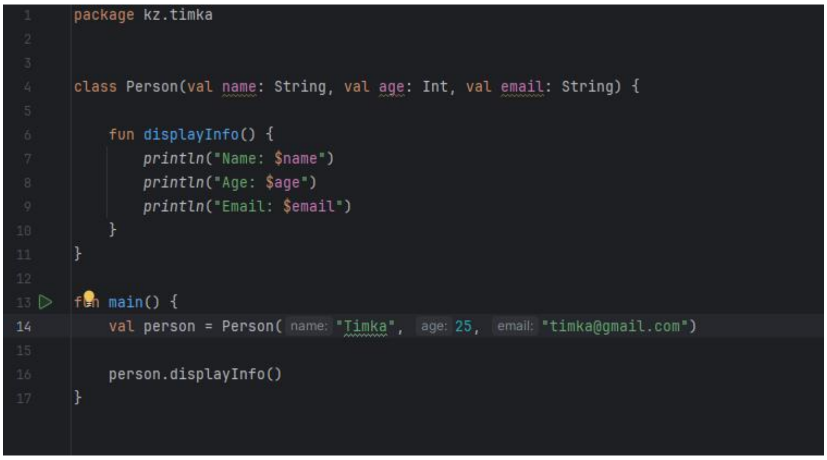
### Collections:



```
package kz.timka


fun main() {

    val numbers = listOf(1, 2, 3, 4, 5)


    var sum = 0
    for (number in numbers) {
        sum += number
    }


    println("The sum is: $sum")
}
```

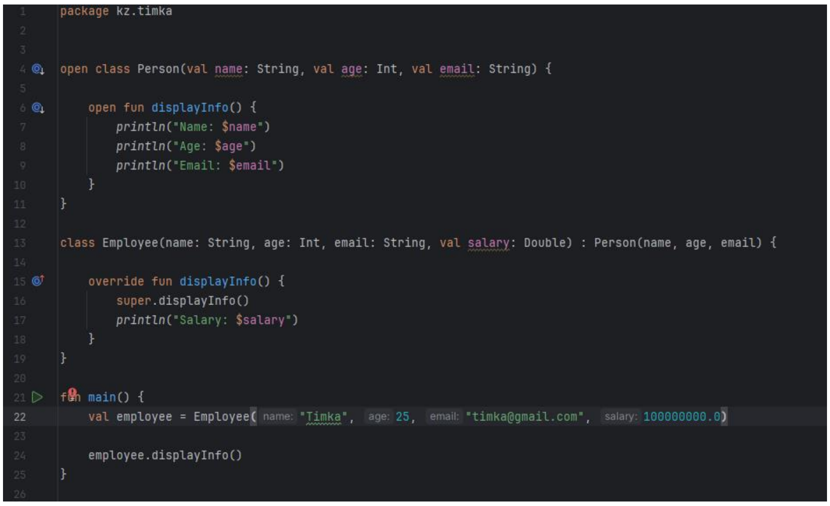
## Exercise 2: Kotlin OOP (Object-Oriented Programming)

### Create a `Person` class:



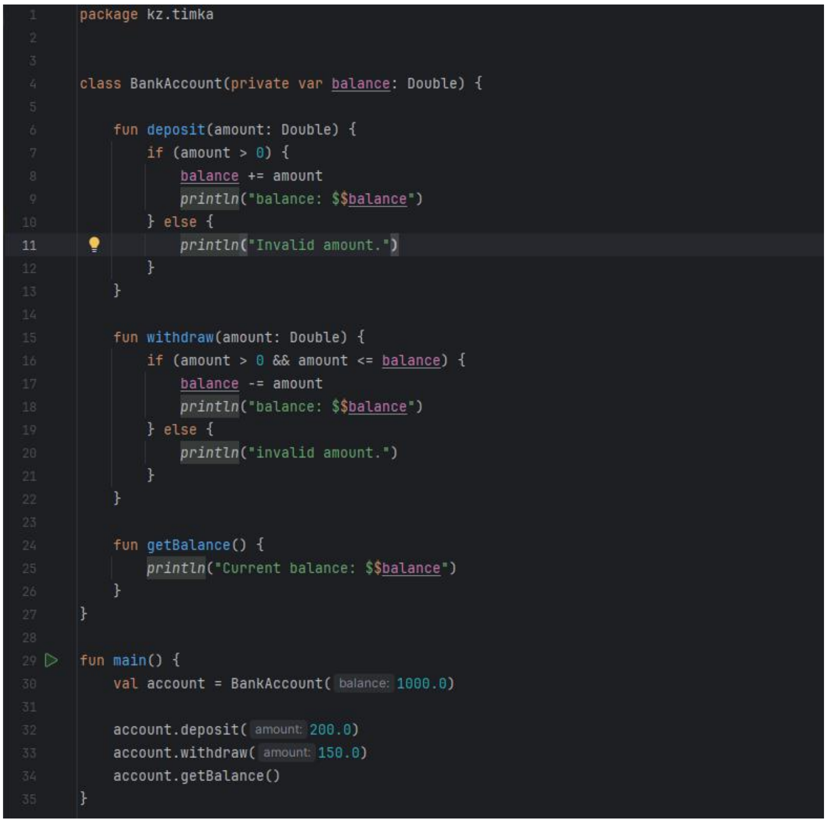
```kotlin
package kz.timka


class Person(val name: String, val age: Int, val email: String) {

    fun displayInfo() {
        println("Name: $name")
        println("Age: $age")
        println("Email: $email")
    }
}

fun main() {
    val person = Person("Timka", 25, "timka@gmail.com")

    person.displayInfo()
}
```

## Inheritance:



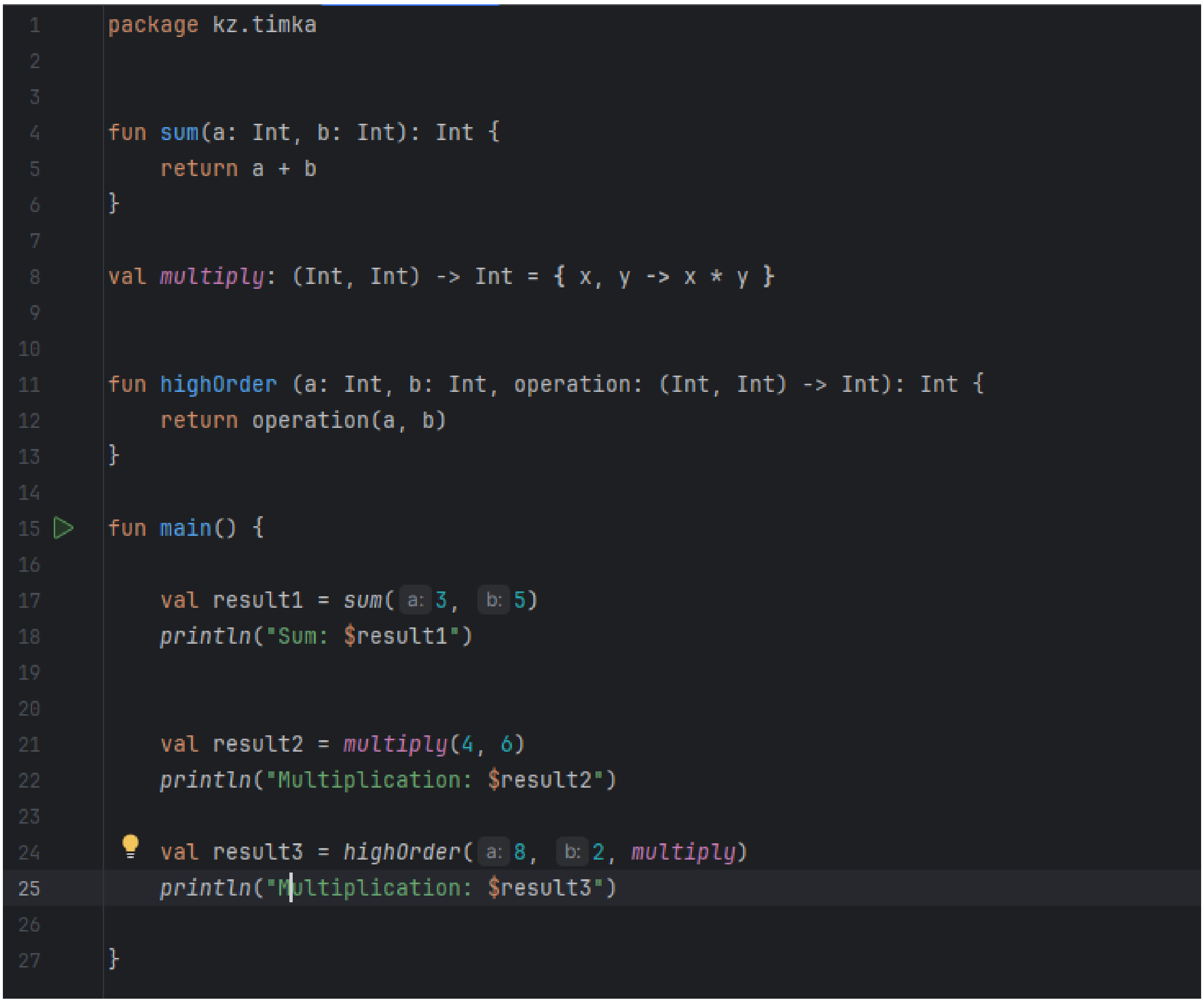
```kotlin
package kz.timka


open class Person(val name: String, val age: Int, val email: String) {

    open fun displayInfo() {
        println("Name: $name")
        println("Age: $age")
        println("Email: $email")
    }
}

class Employee(name: String, age: Int, email: String, val salary: Double) : Person(name, age, email) {

    override fun displayInfo() {
        super.displayInfo()
        println("Salary: $salary")
    }
}

fun main() {
    val employee = Employee("Timka", 25, "timka@gmail.com", 100000000.0)

    employee.displayInfo()
}
```

## Encapsulation:



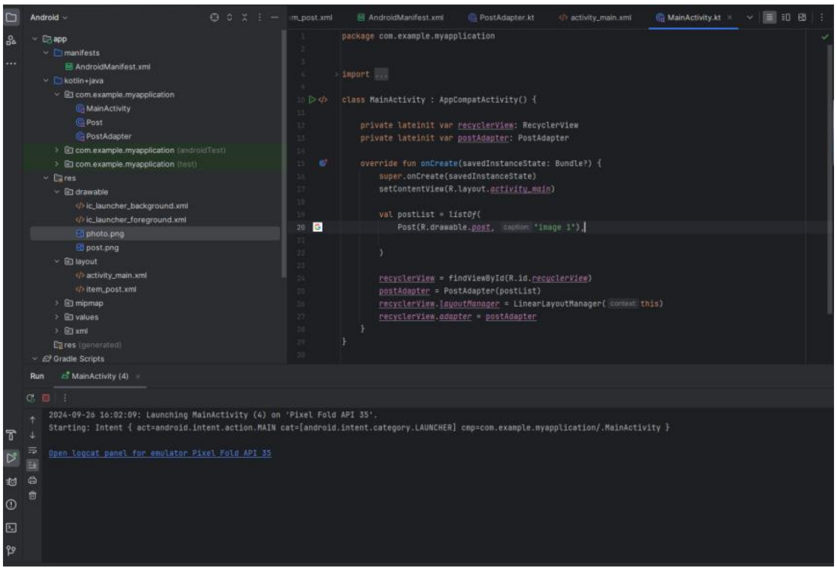
```kotlin
package kz.timka


class BankAccount(private var balance: Double) {

    fun deposit(amount: Double) {
        if (amount > 0) {
            balance += amount
            println("balance: $$balance")
        } else {
            println("Invalid amount.")
        }
    }

    fun withdraw(amount: Double) {
        if (amount > 0 && amount <= balance) {
            balance -= amount
            println("balance: $$balance")
        } else {
            println("invalid amount.")
        }
    }

    fun getBalance() {
        println("Current balance: $$balance")
    }
}

fun main() {
    val account = BankAccount(1000.0)

    account.deposit(200.0)
    account.withdraw(150.0)
    account.getBalance()
}
```

## Exercise 3: Kotlin Functions



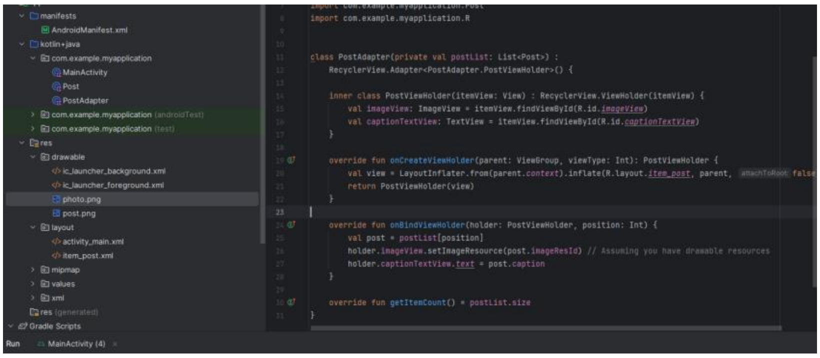
```kotlin
package kz.timka


fun sum(a: Int, b: Int): Int {
    return a + b
}

val multiply: (Int, Int) -> Int = { x, y -> x * y }


fun highOrder (a: Int, b: Int, operation: (Int, Int) -> Int): Int {
    return operation(a, b)
}

fun main() {

    val result1 = sum(3, 5)
    println("Sum: $result1")


    val result2 = multiply(4, 6)
    println("Multiplication: $result2")

    val result3 = highOrder(8, 2, multiply)
    println("Multiplication: $result3")

}
```

## Exercise 4:

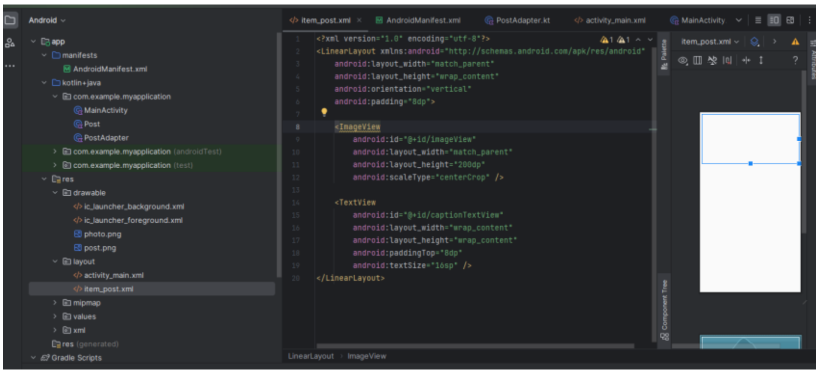


```kotlin
package com.example.myapplication


import ...

class MainActivity : AppCompatActivity() {

    private lateinit var recyclerView: RecyclerView
    private lateinit var postAdapter: PostAdapter

    override fun onCreate(savedInstanceState: Bundle?) {
        super.onCreate(savedInstanceState)
        setContentView(R.layout.activity_main)

        val postList = listOf(
            Post(R.drawable.post, "image 1"),

        )

        recyclerView = findViewById(R.id.recyclerView)
        postAdapter = PostAdapter(postList)
        recyclerView.layoutManager = LinearLayoutManager(this)
        recyclerView.adapter = postAdapter
    }
}
```

```
2024-09-26 16:02:09: Launching MainActivity (4) on 'Pixel Fold API 35'.
Starting: Intent { act=android.intent.action.MAIN cat=[android.intent.category.LAUNCHER] cmp=com.example.myapplication/.MainActivity }

Open logcat panel for emulator Pixel Fold API 35
```



```kotlin
import com.example.myapplication.Post
import com.example.myapplication.R


class PostAdapter(private val postList: List<Post>) :
    RecyclerView.Adapter<PostAdapter.PostViewHolder>() {

    inner class PostViewHolder(itemView: View) : RecyclerView.ViewHolder(itemView) {
        val imageView: ImageView = itemView.findViewById(R.id.imageView)
        val captionTextView: TextView = itemView.findViewById(R.id.captionTextView)
    }

    override fun onCreateViewHolder(parent: ViewGroup, viewType: Int): PostViewHolder {
        val view = LayoutInflater.from(parent.context).inflate(R.layout.item_post, parent, attachToRoot: false
        return PostViewHolder(view)
    }

    override fun onBindViewHolder(holder: PostViewHolder, position: Int) {
        val post = postList[position]
        holder.imageView.setImageResource(post.imageResId) // Assuming you have drawable resources
        holder.captionTextView.text = post.caption
    }

    override fun getItemCount() = postList.size
}
```



```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="vertical"
    android:padding="8dp">

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:scaleType="centerCrop" />

    <TextView
        android:id="@+id/captionTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:paddingTop="8dp"
        android:textSize="16sp" />
</LinearLayout>
```