



UNIVERSITI MALAYSIA TERENGGANU

FACULTY OF OCEAN ENGINEERING TECHNOLOGY & INFORMATICS

SEMESTER 1 2023/2024

NATIVE MOBILE PROGRAMMING

CSM 3123

LAB 4 REPORT

PREPARED FOR:

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Task 1

<https://developer.android.com/codelabs/basic-android-kotlin-compose-using-state>

Task 2

<https://developer.android.com/courses/pathways/android-basics-compose-unit-3-pathway-1>

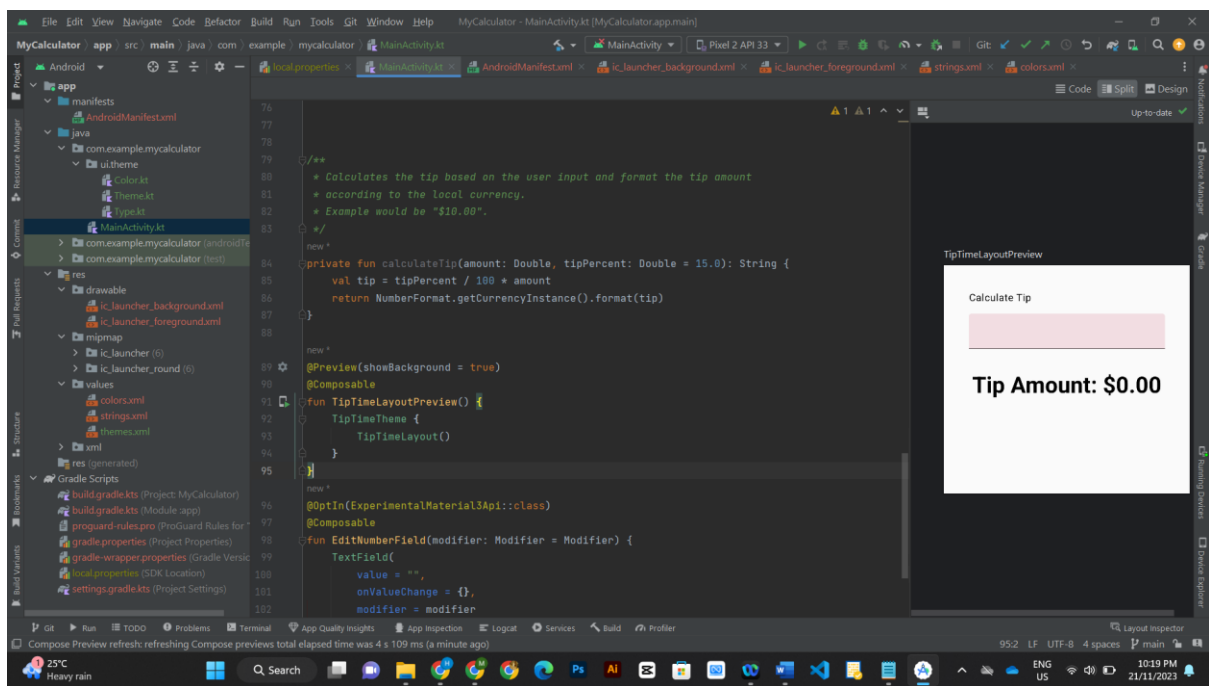
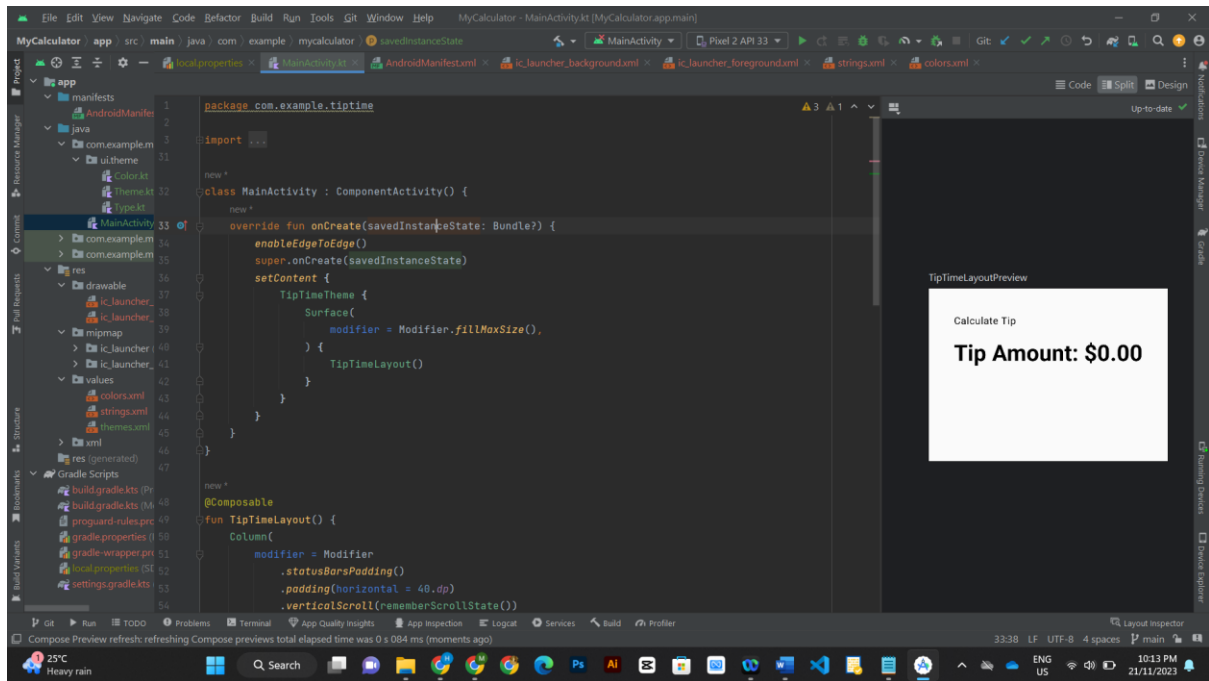
Task 3

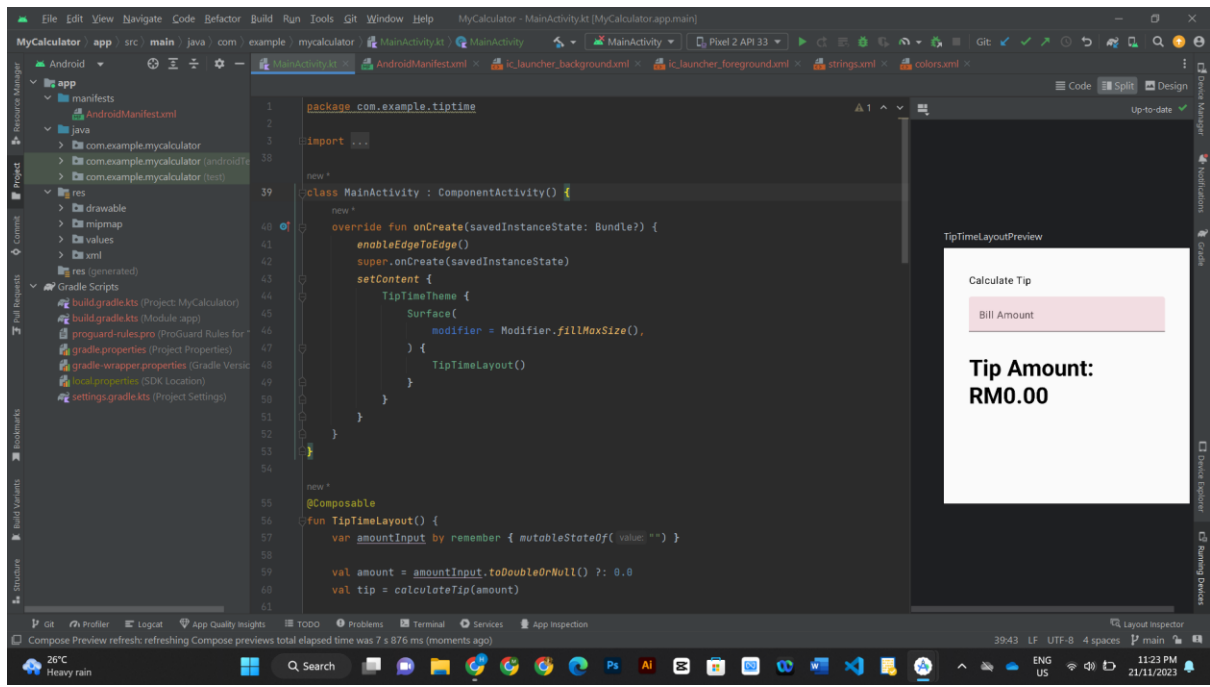
<https://developer.android.com/courses/pathways/android-basics-compose-unit-3-pathway-2>

Task 4

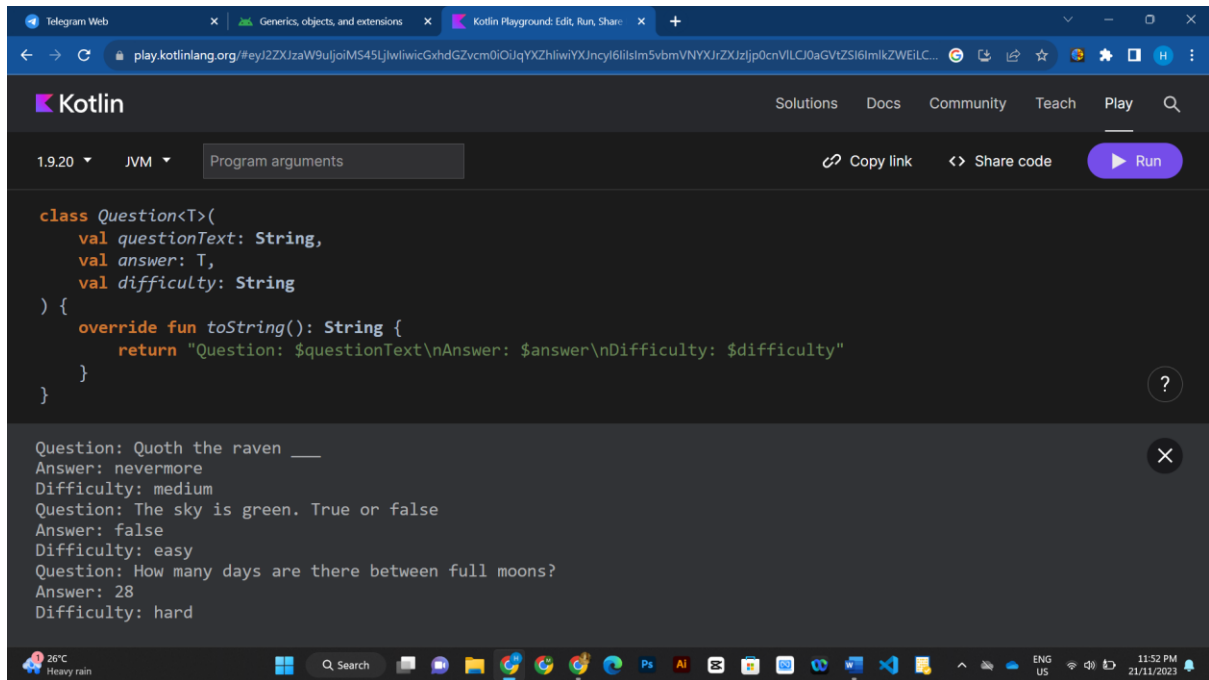
<https://developer.android.com/courses/pathways/android-basics-compose-unit-3-pathway-3>

Task 1





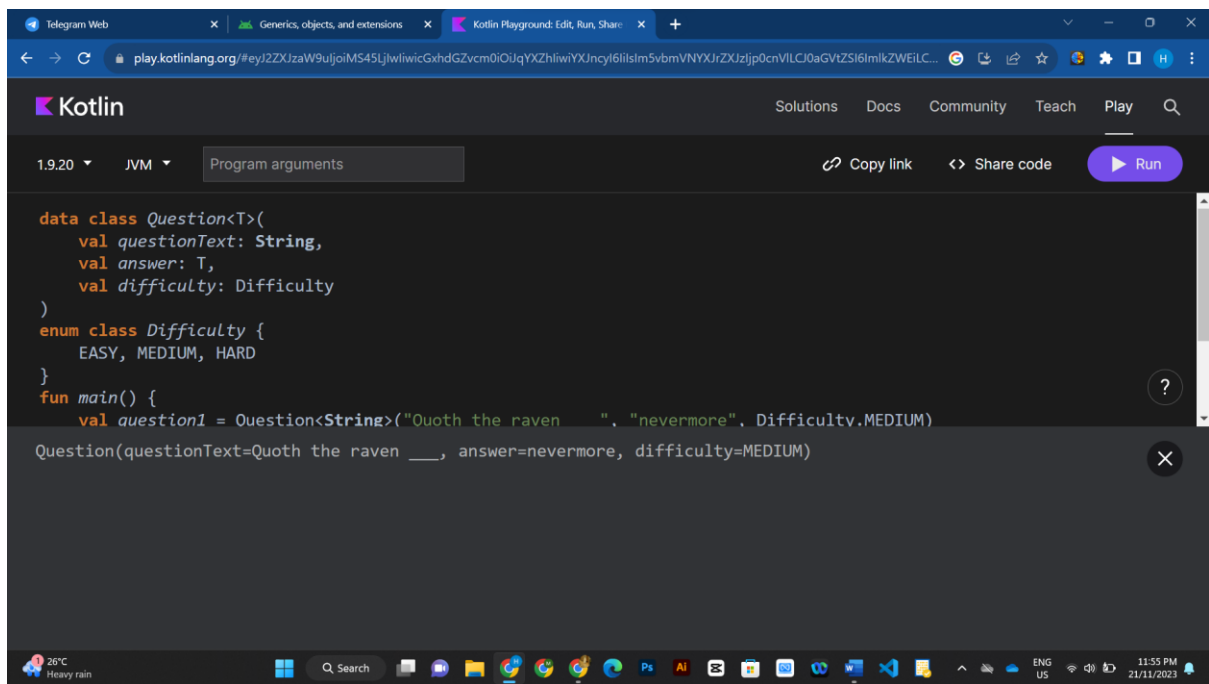
Task 2 (2)



The screenshot shows the Kotlin Playground interface. The top bar includes the Kotlin logo, navigation links (Solutions, Docs, Community, Teach, Play), and a search icon. Below the bar, the version is set to 1.9.20 and the JVM target is selected. The program arguments field is empty. The code editor contains a generic class `Question` with properties `questionText`, `answer`, and `difficulty`, and a `toString` method. The output console shows the results of running the program, displaying three questions and their corresponding answers and difficulties.

```
class Question<T> {
    val questionText: String,
    val answer: T,
    val difficulty: String
} {
    override fun toString(): String {
        return "Question: $questionText\nAnswer: $answer\nDifficulty: $difficulty"
    }
}
```

Question: Quoth the raven ____
Answer: nevermore
Difficulty: medium
Question: The sky is green. True or false
Answer: false
Difficulty: easy
Question: How many days are there between full moons?
Answer: 28
Difficulty: hard



The screenshot shows the Kotlin Playground interface with a different code example. The code defines a `data class Question` with properties `questionText`, `answer`, and `difficulty` of type `Difficulty`. It also defines an `enum class Difficulty` with values `EASY`, `MEDIUM`, and `HARD`. A `main` function creates a `Question` object and prints it. The output console shows the formatted string representation of the `Question` object.

```
data class Question<T> {
    val questionText: String,
    val answer: T,
    val difficulty: Difficulty
}
enum class Difficulty {
    EASY, MEDIUM, HARD
}
fun main() {
    val question1 = Question<String>("Quoth the raven ____", "nevermore", Difficulty.MEDIUM)
    Question(questionText=Quoth the raven ____, answer=nevermore, difficulty=MEDIUM)
```

Telegram Web

Generics, objects, and extensions

Kotlin Playground: Edit, Run, Share

+

play.kotlinlang.org/#eyJ2ZXJzaW9uIjoI...wliwicGxhdGZvcn0iOiJqYXZlhiwYXJncyI6Ilslm5vbmVNYXJrZXJzlp0cnVlLCJ0aGVtZSI6ImkZWWEiLC...

Kotlin

Solutions

Docs

Community

Teach

Play

Q

1.9.20

JVM

Program arguments

Copy link

Share code

Run

```
var total: Int = 10
var answered: Int = 3

fun main() {
    val question1 = Question<String>("Quoth the raven __", "nevermore", Difficulty.MEDIUM)
    val question2 = Question<Boolean>("The sky is green. True or false", false, Difficulty.EASY)
    val question3 = Question<Int>("How many days are there between full moons?", 28, Difficulty.HARD)
    println("${StudentProgress.answered} of ${StudentProgress.total} answered.")
}
```

?

3 of 10 answered.

X

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Search

Ps

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ENG US

11:57 PM 21/11/2023

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Kotlin

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Q

1.9.20

JVM

Program arguments

Copy link

Share code

Run

```
)
enum class Difficulty {
    EASY, MEDIUM, HARD
}
class Quiz {
    val question1 = Question<String>("Quoth the raven __", "nevermore", Difficulty.MEDIUM)
    val question2 = Question<Boolean>("The sky is green. True or false", false, Difficulty.EASY)
    val question3 = Question<Int>("How many days are there between full moons?", 28, Difficulty.HARD)

    companion object StudentProgress {
        total = 10
        answered = 3
    }
}
```

?

3 of 10 answered.

X

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Search

Ps

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12:05 AM 22/11/2023

Telegram Web x Generics, objects, and extensions x Kotlin Playground: Edit, Run, Share x +

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Kotlin Solutions Docs Community Teach Play Q

1.9.20 JVM Program arguments Copy link Share code Run

```
class Question<T>{
    val questionText: String,
    val answer: T,
    val difficulty: String
} {
    override fun toString(): String {
        return "$questionText\n$answer\n${difficulty.toUpperCase()}"
    }
}
```

Quoth the raven ____
nevermore
MEDIUM

The sky is green. True or false
false
EASY

How many days are there between full moons?
28

26°C Heavy rain 12:09 AM 22/11/2023

Telegram Web x Android Basics Compose - More Kotlin x Kotlin Playground: Edit, Run, Share x +

developer.android.com/courses/pathways/android-basics-compose-unit-3-pathway-1#code-lab-https://developer.android.com/codelabs/basic-androi...

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- 5 Practice: Classes and Collections CodeLab

Quiz

Test what you've learned and earn your More Kotlin fundamentals badge.

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Task 2 (3)

The screenshot shows the Kotlin Playground interface. The code defines two arrays: `rockPlanets` containing "Mercury", "Venus", "Earth", and "Mars"; and `gasPlanets` containing "Jupiter", "Saturn", "Uranus", and "Neptune". These are concatenated into `solarSystem`. The program prints the first and second elements of `solarSystem`.

```
fun main() {  
  
    val rockPlanets = arrayOf<String>("Mercury", "Venus", "Earth", "Mars")  
    val gasPlanets = arrayOf("Jupiter", "Saturn", "Uranus", "Neptune")  
    val solarSystem = rockPlanets + gasPlanets  
  
    println(solarSystem[0])  
    println(solarSystem[1])  
}
```

The output of the program is:

```
Mercury  
Venus  
Earth  
Mars  
Jupiter  
Saturn  
Uranus  
Neptune
```

The screenshot shows the Kotlin Playground interface. The code defines a mutable list `solarSystem` containing "Mercury", "Venus", "Earth", "Mars", "Jupiter", "Saturn", "Uranus", and "Neptune". The program checks if "Pluto" is in the list and prints the result, then prints "Future Moon" in the list.

```
fun main() {  
    val solarSystem = mutableListOf("Mercury", "Venus", "Earth", "Mars", "Jupiter", "Saturn", "Uranus", "Neptune")  
  
    println(solarSystem.contains("Pluto"))  
    println("Future Moon" in solarSystem)  
}
```

The output of the program is:

```
false  
false
```


Telegram Web x Use collections in Kotlin x Kotlin Playground: Edit, Run, Share x +

play.kotlinlang.org/#eyJ2ZXJzaW9uIjoI... Kotlin Solutions Docs Community Teach Play

1.9.20 JVM Program arguments Copy link Share code Run

```
fun main() {  
    val solarSystem = mutableSetOf("Mercury", "Venus", "Earth", "Mars", "Jupiter", "Saturn", "Uranus", "Neptune")  
  
    println(solarSystem.size)  
    println(solarSystem.contains("Pluto"))  
}
```

8
false

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1.9.20 JVM Program arguments Copy link Share code Run

```
    "Venus" to 0,  
    "Earth" to 1,  
    "Mars" to 2,  
    "Jupiter" to 79,  
    "Saturn" to 82,  
    "Uranus" to 27,  
    "Neptune" to 14  
)  
  
solarSystem["Jupiter"] = 78  
println(solarSystem["Jupiter"])
```

78

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ChatGPT x Android Basics Compose - More K... x +

developer.android.com/courses/pathways/android-basics-compose-unit-3-pathway-1#codelab-https://developer.android.com/codelabs/basic-androi...

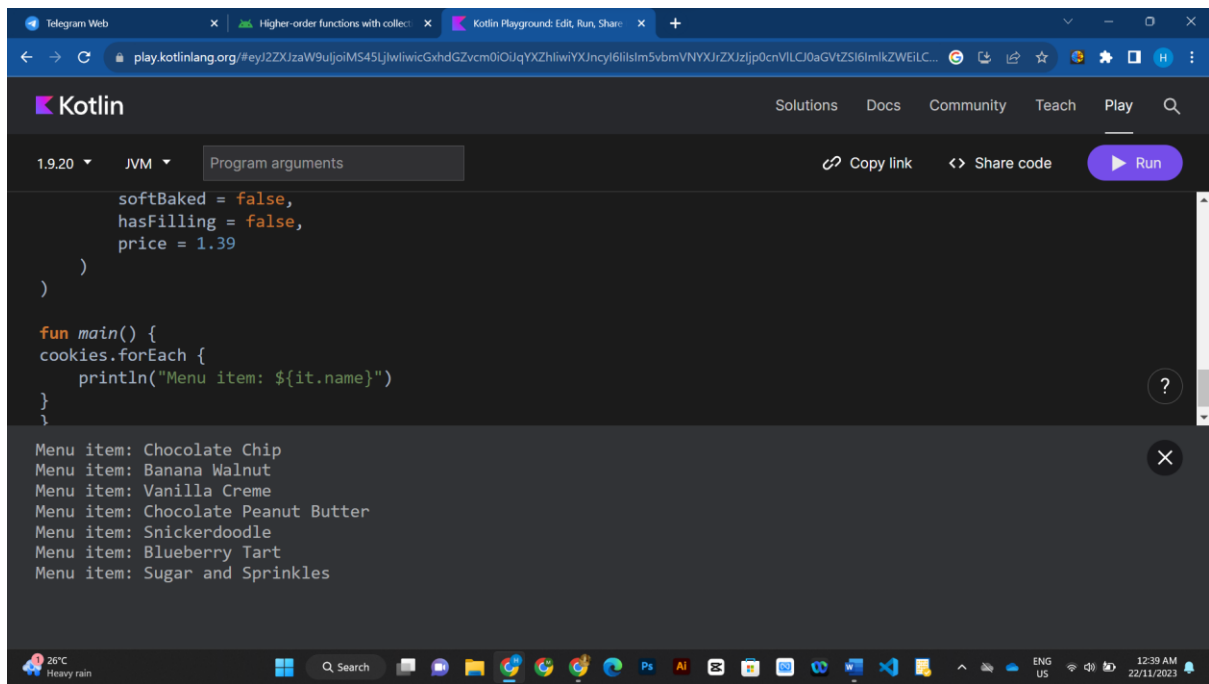
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Quiz

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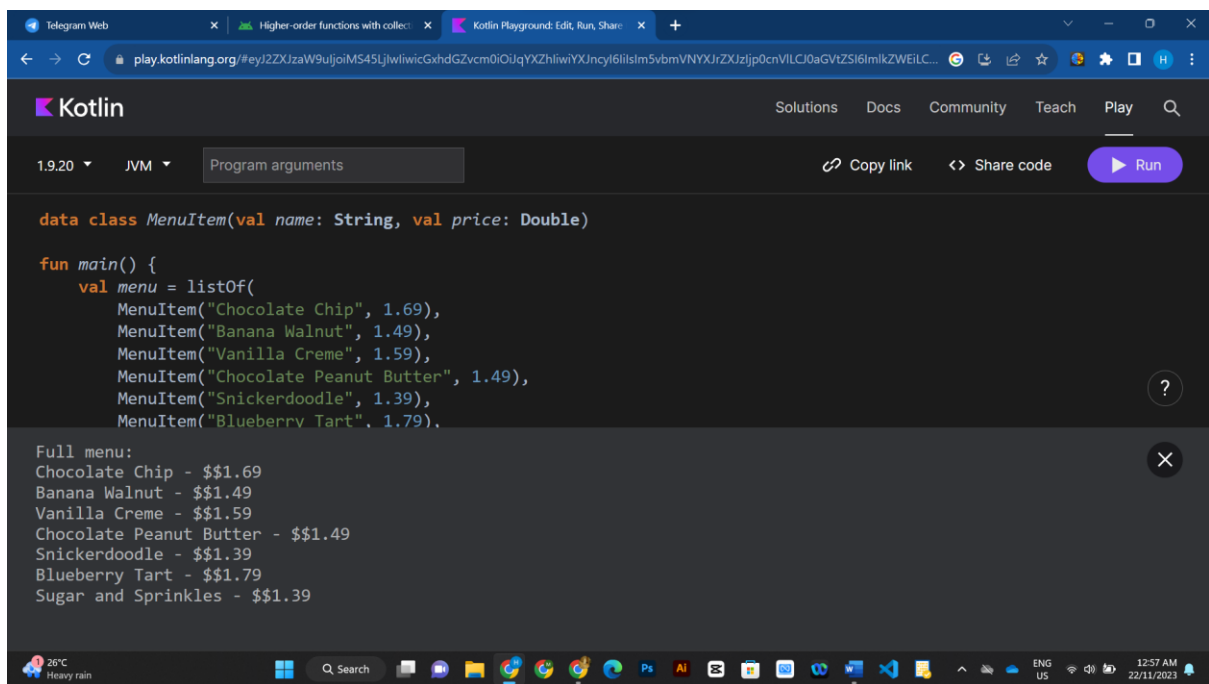
Task 2 (4)



The screenshot shows the Kotlin Playground interface. The code defines a `cookies` list and a `main` function that iterates over it to print menu items. The output shows a list of items with their names.

```
1.9.20 JVM Program arguments  
Copy link Share code Run  
softBaked = false,  
hasFilling = false,  
price = 1.39  
)  
)  
  
fun main() {  
    cookies.forEach {  
        println("Menu item: ${it.name}")  
    }  
}
```

Menu item: Chocolate Chip
Menu item: Banana Walnut
Menu item: Vanilla Creme
Menu item: Chocolate Peanut Butter
Menu item: Snickerdoodle
Menu item: Blueberry Tart
Menu item: Sugar and Sprinkles



The screenshot shows the Kotlin Playground interface. The code defines a `MenuItem` data class and a `main` function that creates a list of `MenuItem` objects. The output shows the full menu with item names and prices.

```
1.9.20 JVM Program arguments  
Copy link Share code Run  
data class MenuItem(val name: String, val price: Double)  
  
fun main() {  
    val menu = listOf(  
        MenuItem("Chocolate Chip", 1.69),  
        MenuItem("Banana Walnut", 1.49),  
        MenuItem("Vanilla Creme", 1.59),  
        MenuItem("Chocolate Peanut Butter", 1.49),  
        MenuItem("Snickerdoodle", 1.39),  
        MenuItem("Blueberry Tart", 1.79),  
    )  
}
```

Full menu:
Chocolate Chip - \$\$1.69
Banana Walnut - \$\$1.49
Vanilla Creme - \$\$1.59
Chocolate Peanut Butter - \$\$1.49
Snickerdoodle - \$\$1.39
Blueberry Tart - \$\$1.79
Sugar and Sprinkles - \$\$1.39

Telegram Web x Higher-order functions with collect x Kotlin Playground: Edit, Run, Share x +

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1.9.20 JVM Program arguments Copy link Share code Run

```
data class MenuItem(val name: String, val price: Double)

fun main() {
    val menu = listOf(
        MenuItem("Chocolate Chip", 1.69),
        MenuItem("Banana Walnut", 1.49),
        MenuItem("Vanilla Creme", 1.59),
        MenuItem("Chocolate Peanut Butter", 1.49),
        MenuItem("Snickerdoodle", 1.39),
        MenuItem("Blueberry Tart", 1.79),
    )
}
```

Soft cookies:
Banana Walnut - \$\$1.49
Snickerdoodle - \$\$1.39
Blueberry Tart - \$\$1.79

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1.9.20 JVM Program arguments Copy link Share code Run

```
val menu = listOf(
    MenuItem("Chocolate Chip", 1.69, "Crunchy"),
    MenuItem("Banana Walnut", 1.49, "Soft"),
    MenuItem("Vanilla Creme", 1.59, "Crunchy"),
    MenuItem("Chocolate Peanut Butter", 1.49, "Crunchy"),
    MenuItem("Snickerdoodle", 1.39, "Soft"),
    MenuItem("Blueberry Tart", 1.79, "Soft"),
    MenuItem("Sugar and Sprinkles", 1.39, "Crunchy")
)
```

Soft cookies:
Banana Walnut - \$\$1.49
Snickerdoodle - \$\$1.39
Blueberry Tart - \$\$1.79

Crunchy cookies:
Chocolate Chip - \$\$1.69
Vanilla Creme - \$\$1.59
Chocolate Peanut Butter - \$\$1.49
Sugar and Sprinkles - \$\$1.39

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1.9.20 JVM Program arguments Copy link Share code Run

```
data class MenuItem(val name: String, val price: Double, val texture: String)

fun main() {
    val menu = listOf(
        MenuItem("Chocolate Chip", 1.69, "Crunchy"),
        MenuItem("Banana Walnut", 1.49, "Soft"),
        MenuItem("Vanilla Creme", 1.59, "Crunchy"),
        MenuItem("Chocolate Peanut Butter", 1.49, "Crunchy"),
        MenuItem("Snickerdoodle", 1.39, "Soft"),
        MenuItem("Blueberry Tart", 1.79, "Soft")
    )

    println("Total price: \$10.83")
}
```

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1.9.20 JVM Program arguments Copy link Share code Run



```
MenuItem("Snickerdoodle", 1.39, "Soft"),
MenuItem("Blueberry Tart", 1.79, "Soft"),
MenuItem("Sugar and Sprinkles", 1.39, "Crunchy")
)


println("Alphabetical menu:")
menu.sortedBy { it.name }.forEach { item ->
    println(item.name)
}
}
```



Alphabetical menu:
Banana Walnut
Blueberry Tart
Chocolate Chip
Chocolate Peanut Butter
Snickerdoodle
Sugar and Sprinkles
Vanilla Creme


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 **Use collections in Kotlin** 

 Codelab

 **Higher-order functions with collections** 

 Codelab

5 **Practice: Classes and Collections** 

 Codelab

Quiz

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Take the quiz

Task 2 (5)

The screenshot shows the Kotlin Playground interface. The code defines a data class `Event` with properties `title`, `description`, `daypart`, and `durationInMinutes`. The `main` function creates a single `Event` object with the title "Study Kotlin". The output shows the details of this single event.

```
data class Event(  
    val title: String,  
    val description: String,  
    val daypart: String,  
    val durationInMinutes: Int  
)  
  
fun main() {  
    val event = Event(  
        title = "Study Kotlin",  
        description = "Commit to studying Kotlin at least 15 minutes per day.",  
        daypart = "Evening",  
        durationInMinutes = 15  
    )  
}
```

Output: Event(title=Study Kotlin, description=Commit to studying Kotlin at least 15 minutes per day., daypart=Evening, durationInMinutes=15)

The screenshot shows the Kotlin Playground interface. The code defines a data class `Event` and the `main` function creates a list of 8 `Event` objects. The output shows the count of events for each daypart: Morning (2), Afternoon (4), and Evening (2).

```
fun main() {  
    // Create a List of events  
    val events = listOf(  
        Event("Event1", "Description1", "Morning", 30),  
        Event("Event2", "Description2", "Afternoon", 45),  
        Event("Event3", "Description3", "Morning", 20),  
        Event("Event4", "Description4", "Afternoon", 60),  
        Event("Event5", "Description5", "Afternoon", 30),  
        Event("Event6", "Description6", "Evening", 45),  
        Event("Event7", "Description7", "Evening", 60),  
        Event("Event8", "Description8", "Afternoon", 15)  
    )  
}
```

Output: Morning: 2 events
Afternoon: 4 events
Evening: 2 events

Android Basics Compose - More Kotlin

ChatGPT

developer.android.com/courses/pathways/android-basics-compose-unit-3-pathway-1#code-lab-https://developer.android.com/code-labs/basic-andro...

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4:53 PM
22/11/2023

Task 2 (Quiz)

The image shows two screenshots of the Android Developer website. The top screenshot displays the 'Quiz' section with a 'Take the quiz' button. The bottom screenshot shows the 'Results' section, indicating a score of 7 out of 10 and the completion of the 'More Kotlin fundamentals badge'.

Quiz Section:

Quiz

Test what you've learned and earn your More Kotlin fundamentals badge.

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Quiz Results Section:

Results

You scored **7 out of 10**. Congratulations! You have passed this quiz.

You earned the **More Kotlin fundamentals badge!**
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Task 4

