

Sri Lanka Institute of Information Technology



Year 3, Semester II, 2024  
Assignment 01

**Fitness Training Program**

Software Architecture (SE3030)

BSc (Hons) in Information Technology

Specializing in Software Engineering

## Group Details

Batch: Y3.S2.WE.SE.02.02

Student Registration Number	Student Name	Scenario
IT21251900	Rajapaksha R.M.S.D	Monthly Fitness Challenges with Nutritional Plans and Workout Tracking Apps
IT21302862	Sri Samadhi L.A.S.S	Group Fitness Classes with Personal Training Add-ons
IT21252754	Madhumalka K.C.S	Fitness Equipment Bundles with Training Programs for Home Workouts
IT19985428	Rathnasiri K.D.M.M	Bootcamp and Retreats Training Program with Accommodation for Outdoor Activities

## Introduction:

One important step forward in providing customers with individualized fitness solutions is the integration of a fitness training program within the OSGi platform. Our project leverages the flexibility and versatility of OSGi to fulfill the specific demands and preferences of fitness enthusiasts while satisfying a variety of customer scenarios. We can efficiently manage and supply a range of fitness services, from outdoor boot camps with housing and nutritious meal plans to group fitness classes with personal training add-ons, by implementing a consumer-producer-based approach. This report gives a high-level overview of our implementation inside the OSGi framework, emphasizing its salient characteristics, constituent parts, and advantages for fitness service providers and customers alike. We hope to completely transform the fitness sector with our ground-breaking approach by incorporating.

Source Code

[Click here](#) to view the source code on github.

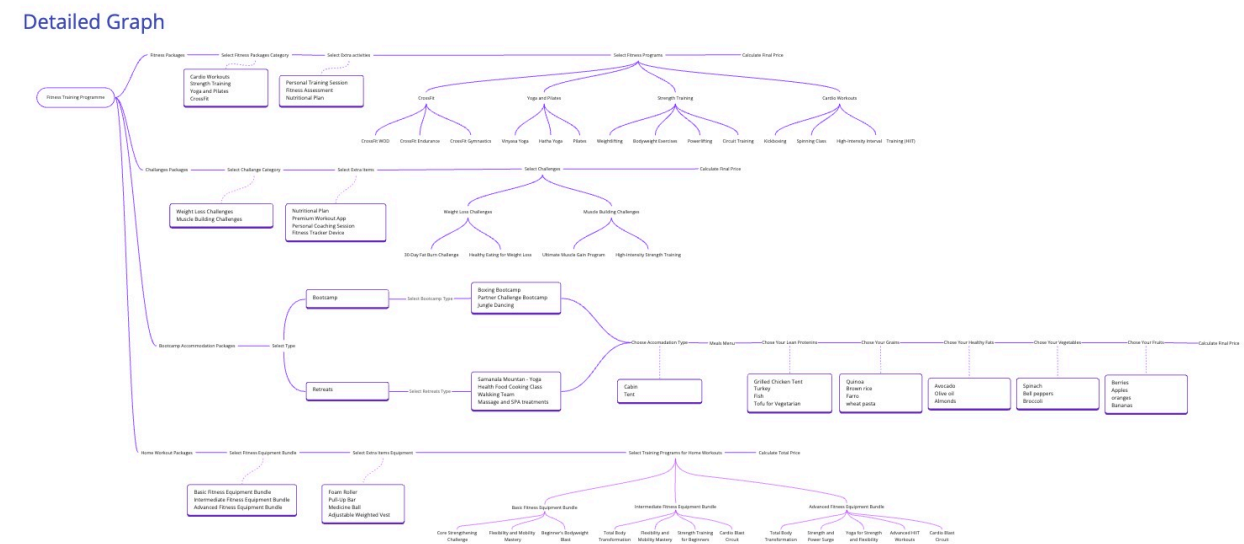
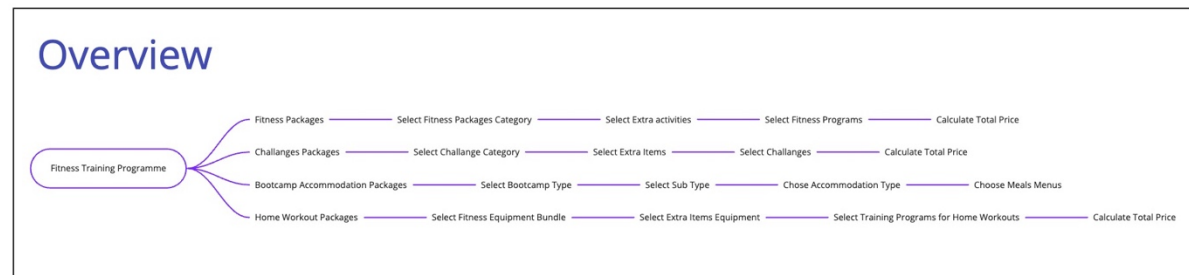
# 01.Diagrams

Consumer Scenario 1: Group Fitness Classes with Personal Training Add-ons

Consumer Scenario 2: Monthly Fitness Challenges with Nutritional Plans

Consumer Scenario 3: Outdoor Boot Camps or Retreats with Accommodation and Healthy Meal Plans

Consumer Scenario 4: Fitness Equipment Bundles with Training Programs for Home Workouts.



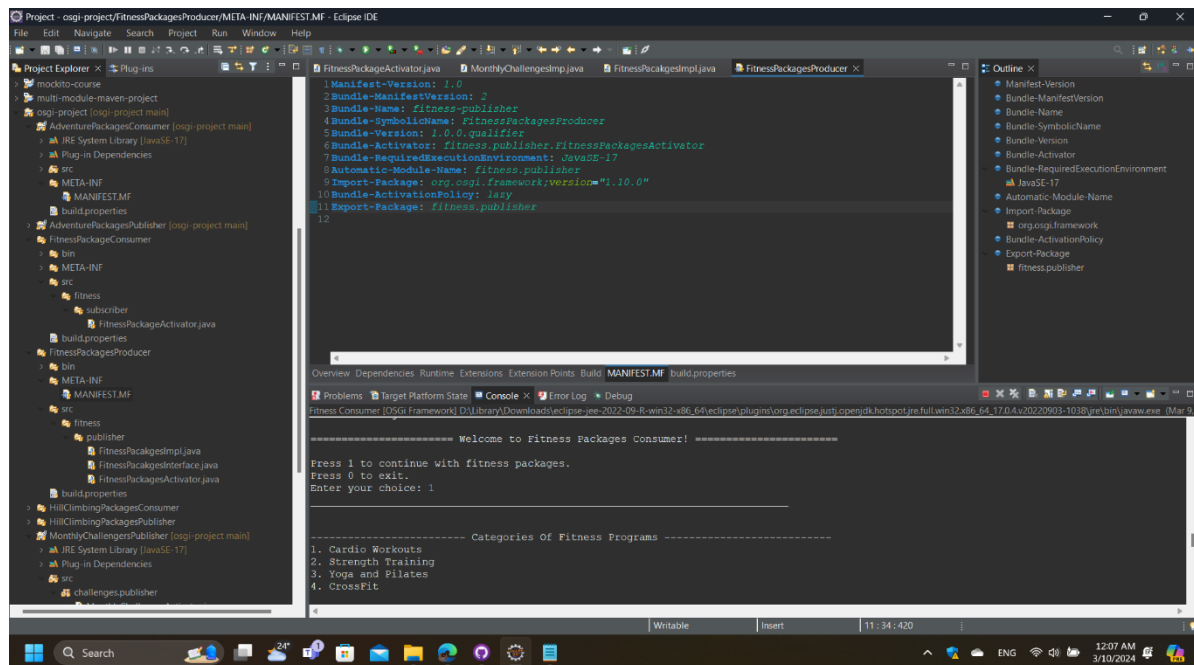
Link : [Click here](#) to view on miro

## 02. Manifest implementation (Exported services/ imported services)

### Producer Bundle:

#### Exported Services:

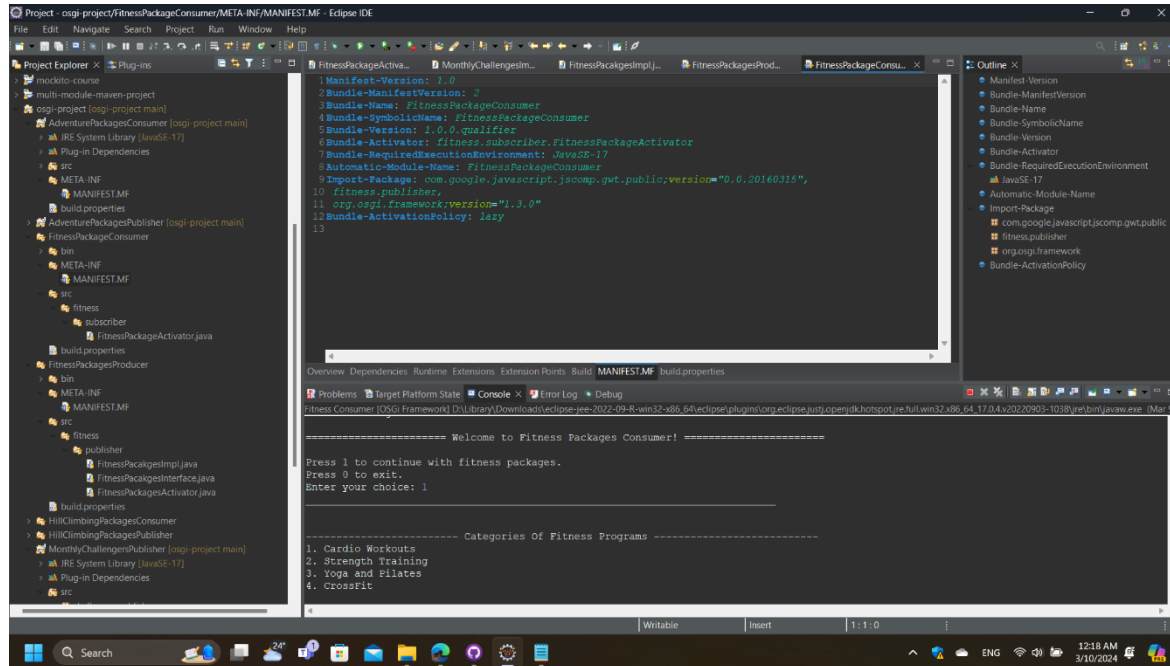
01. Implement the service interface (Eg: FitnessPackageInterface)
02. Define the service implementation class. (Eg: FitnessPackageImpl)
03. Add dependencies for the MANIFEST file & check necessary packages in the 'Exported Package' Section.
04. For the runtime environment add the package name.



## Consumer Bundle:

### Imported Services:

1. Add the necessary dependencies (producer package, orgi framework)



## 03.Bundle Installation and Running Commands:

### Step 1: Start Eclipse Equinox OSGi Framework

- Open Eclipse IDE.
- Make sure if Equinox is installed or not. Check this by going to Help > Eclipse Marketplace... and searching for Equinox.
- Once Equinox is installed, Start Eclipse.

### Step 2: Create and Build Bundles

- Create Producer and Consumer bundles in Eclipse. Each bundle should have its own project.
- Implement the required functionality in each bundle.
- Build the bundles. Right-click on each bundle project, select Export > Deployable plug-ins and fragments, and follow the export wizard to generate JAR files for each bundle.

### **Step 3: Start Equinox Console**

- In Eclipse, go to Run > Run Configurations....
- Under OSGi Framework, select Equinox Framework.
- Click Run.

### **Step 4: Install and Start Bundles**

#### **Producer Bundle Installation and Running:**

- In the Equinox console, use the install command to install the Producer bundle  
`osgi > install file:/C:/user/osgi/producer-bundle.jar`
- Once installed, start the Producer bundle  
`osgi > start <producer-bundle-id>`

#### **Consumer Bundle Installation and Running:**

- In the Equinox console, use the install command to install the Consumer bundle  
`osgi > install file:/C:/user/osgi/producer-bundle.jar`
- Once installed, start the Consumer bundle  
`osgi > start <consumer-bundle-id>`

### **Step 5: Verify Bundle Installation and Services**

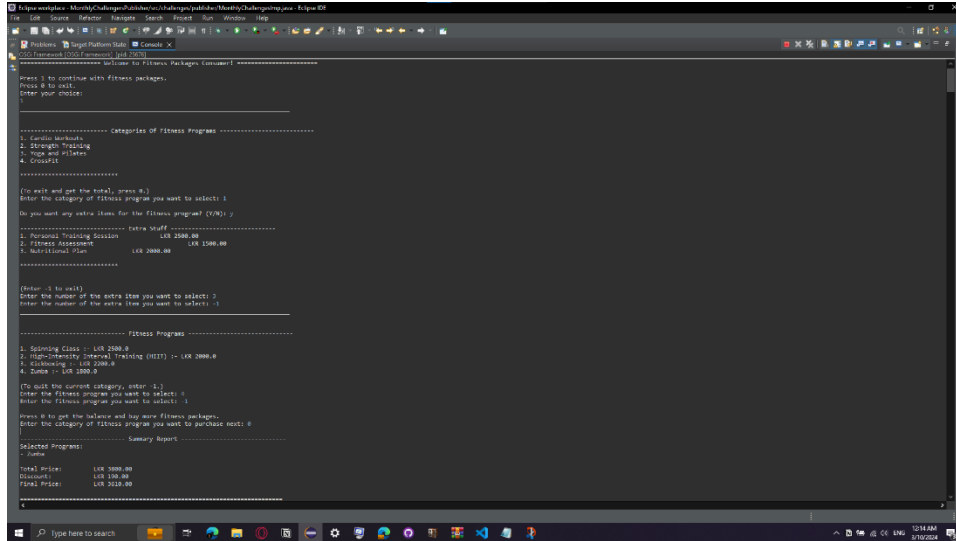
- Use the ss command to list all installed bundles and their status  
`osgi > ss`

Check if the Producer and Consumer bundles are in the list and active.

Verify that the services provided by the Producer bundle are accessible to the Consumer bundle.

## 04. Sample screenshots of behavior & outputs

### Scenario 1: Group Fitness Classes with Personal Training Add-ons:



```

Fitness Packages Publisher
Welcome to Fitness Packages Consumer!

Press 1 to continue with fitness packages.
Press 0 to exit.
Enter your choice:

----- Categories Of Fitness Program -----
1. Spinning Workout
2. Strength Training
3. Yoga and Pilates
4. CrossFit

-----
[To exit and get the total, press 0.]
Enter the category of fitness program you want to select: 1

Do you want any extra items for the fitness program? (Y/N): y

----- Extra stuff -----
1. Personal Training Session -- £18 2000.00
2. Fitness Assessment -- £18 1500.00
3. Nutritional Plan -- £18 2000.00
-----

[Enter -1 to exit]
Enter the number of the extra item you want to select: 2
Enter the number of the extra item you want to select: -1

----- Fitness Program -----
1. Spinning Class -- £18 2000.00
2. High-Intensity Interval Training (HIIT) -- £18 2000.00
3. Kickboxing -- £18 2000.00
4. Zumba -- £18 2000.00

[To exit the current category, enter -1.]
Enter the fitness program you want to select: 0

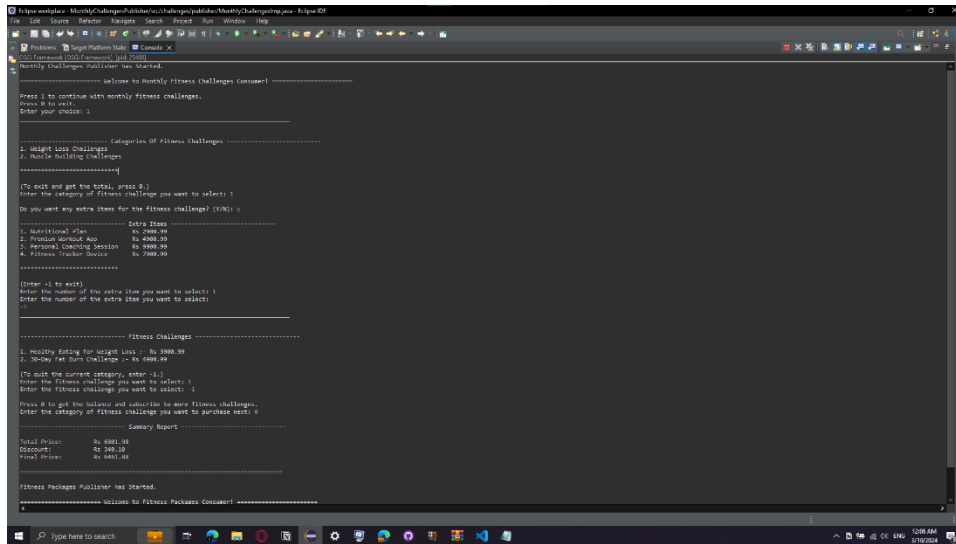
Press 0 to get the balance and subscribe to more fitness packages.
Enter the category of fitness program you want to purchase next: 0

----- Summary Report -----
Selected Programs:
- Zumba
Total Price: £18 2000.00
Discount: £18 1500.00
Final Price: £18 3000.00

-----

```

### Scenario 2: Monthly Fitness Challenges with Nutritional Plans:



```

Fitness Packages Publisher
Welcome to monthly fitness challenges (consumer)

Press 1 to continue with monthly fitness challenges.
Press 0 to exit.
Enter your choice: 1

----- Categories Of Fitness Challenges -----
1. Weight Loss Challenge
2. 30-Day Fat Burn Challenge

-----
[To exit and get the total, press 0.]
Enter the category of fitness challenge you want to select: 1

Do you want any extra items for the fitness challenge? (Y/N): y

----- Extra Items -----
1. Nutritional Plan -- $1 2000.00
2. Personal Coaching Session -- $1 4000.00
3. Fitness Tracker Device -- $1 2000.00
-----

[Enter -1 to exit]
Enter the number of the extra item you want to select: 1
Enter the number of the extra item you want to select: -1

----- Fitness Challenges -----
1. Healthy Eating for Weight Loss -- $1 3000.00
2. 30-Day Fat Burn Challenge -- $1 4000.00

[To exit the current category, enter -1.]
Enter the fitness challenge you want to select: 1

Press 0 to get the balance and subscribe to more fitness challenges.
Enter the category of fitness challenge you want to purchase next: 0

----- Summary Report -----
Total Price: $1 6800.00
Discount: $1 500.00
Final Price: $1 6800.00

-----
Fitness Packages Publisher has started.
Welcome to Fitness Packages Consumer!

```



## Consumer Scenario 3: Outdoor Boot Camps or Retreats with Accommodation and Healthy Meal Plans:

```
originalith - BootCampPackageConsumer/src/bootcampspackageconsumer/BootCampActivator.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
# Console
New configuration (2) [JSG Framework] C:\Users\Malith.p2\pools\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.10\j20240120-1143\jre\bin\java.exe (Mar 10, 2024, 3:31:50 PM) [pid: 10748]
Adventure Publisher has Started.

===== Welcome to Bootcamp Packages Consumer! =====

Press 1 to continue with bootcamp packages.
Press 0 to exit.
Enter your choice: 1

----- Chose Type -----
1. Bootcamp LKR 1000.00
2. Retreats LKR 2000.00
*****

(Enter -1 to exit)
Enter the number which type you prefer: 1

-----
1. Boxing Bootcamp :- LKR 12000.0
2. Patner Chalage Bootcamp :- LKR 18000.0
3. Jungle Dancing :- LKR 16000.0
Enter the number which type you prefer: 2
----- Accomadation -----
1. Tent :- LKR 5000.0
2. Cabine :- LKR 9000.0
Enter the number which type you prefer: 1
----- Meals -----
----- lean Proteins -----
1. Turkey :- LKR 200.0
2. Grilled Chicken :- LKR 150.0
-----
```

```
originalith - BootCampPackageConsumer/src/bootcampspackageconsumer/BootCampActivator.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
# Console
New configuration (2) [JSG Framework] C:\Users\Malith.p2\pools\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.10\j20240120-1143\jre\bin\java.exe (Mar 10, 2024, 3:31:50 PM) [pid: 10748]

----- Meals -----
----- lean Proteins -----
1. Turkey :- LKR 200.0
2. Grilled Chicken :- LKR 150.0
3. Fish :- LKR 130.0
4. ToFu for Vegitarian :- LKR 120.0
Enter the number which type you prefer: 1
----- Meals -----
----- Grains -----
1. Quinoa :- LKR 100.0
2. wheat pasta :- LKR 70.0
3. Farro :- LKR 120.0
4. Brown rice :- LKR 80.0
Enter the number which type you prefer: 2
----- Meals -----
----- Health Fats -----
1. Almonds :- LKR 200.0
2. Avocado :- LKR 120.0
3. Olive oil :- LKR 150.0
Enter the number which type you prefer: 3
----- Meals -----
----- Vegotable -----
1. Broccoli :- LKR 150.0
2. Spinach :- LKR 100.0
3. Bell peppers :- LKR 120.0
Enter the number which type you prefer: 3
----- Meals -----
```

```
oigsmalth - BootCampPackageConsumer/src/bootcamppackageconsumer/BootCampActivator.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Console
New configuration (2) [JDK Framework] C:\Users\Malthip\2\poot\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.10.v20240120-114.0\jre\bin\java.exe (Mar 10, 2024, 3:11:50 PM) [pid: 10748]
2. Wheat pasta :- LKR 70.0
3. Farro :- LKR 120.0
4. Brown rice :- LKR 80.0
Enter the number which type you prefer: 2
Meals
Health Fats
1. Almonds :- LKR 200.0
2. Avocado :- LKR 120.0
3. Olive oil :- LKR 150.0
Enter the number which type you prefer: 3
Meals
Vegetable
1. Broccoli :- LKR 150.0
2. Spinach :- LKR 100.0
3. Bell peppers :- LKR 120.0
Enter the number which type you prefer: 3
Meals
Fruits
1. Apples :- LKR 180.0
2. Oranges :- LKR 150.0
3. Bananas :- LKR 220.0
4. Berries :- LKR 200.0
Enter the number which type you prefer: 2
Press 0 to get the total of Bootcamp Accomadation packages.
0
----- Summary Report -----
Total is : 21690.0
```

## Consumer Scenario 4: Fitness Equipment Bundles with Training Programs for Home Workouts:

```
Chamaththa OSQ - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Markers Properties Servers Data Source Explorer Snippets Terminal Console
New configuration (2) [JDK Framework] C:\Users\Chamaththa\2\poot\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.10.v20240120-114.0\jre\bin\java.exe (Mar 10, 2024, 12:07:56 PM) [pid: 9332]
Equipment Publisher has Started.
----- Welcome to Home Fitness Solutions !! -----
Press 1 to continue with Home Fitness Solutions packages.
Press 0 to exit
Enter your choice: 1
----- Your Fitness Equipment Bundles -----
01. Basic Fitness Equipment Bundle: (LKR 15000.00)
* Dumbbells (2x5kg)
* Resistance Bands (Set of 3)
* Yoga Mat
* Jump Rope
02. Intermediate Fitness Equipment Bundle: (LKR 18000.00)
* Dumbbells (2x5kg, 2x10kg)
* Resistance Bands (Set of 5)
* Yoga Mat
* Workout Bench
* Stability Ball
03. Advanced Bundle: Fitness Equipment (LKR 22000.00)
* Dumbbells (2x5kg, 2x10kg, 2x15kg)
* Resistance Bands (Set of 5)
* Yoga Mat
* Workout Bench
* Kettlebell
* TRX Suspension Trainer
(To exit and get the total, press 0.)
Enter the fitness equipment bundle you want to select: 2
```

```
Chamaththa OSGI - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Markers Properties Servers Data Source Explorer Snippets Terminal Console X
New configuration [OSGI Framework] D:\Compressed\ eclipse\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.7\20230425-1502\jre\bin\javaw.exe (Mar 10, 2024, 12:07:56 PM) [pid: 9532]

(To exit and get the total, press 0.)
Enter the fitness equipment bundle you want to select: 2
Do you want any extra items for the fitness equipment bundle? (Y/N): y

-----
Extra Items
-----
1. Foam Roller - Helps with muscle recovery and flexibility. LKR 1500.00
2. Pull-up Bar - Perfect for upper body strength training. LKR 3000.00
3. Medicine Ball - Adds versatility to your workouts. LKR 2000.00
4. Adjustable Weighted Vest - Intensify your workouts with added resistance. LKR 4000.00

(Enter -1 to exit)
Enter the number of the extra item you want to select: 2
Enter the number of the extra item you want to select: 1
Enter the number of the extra item you want to select: -1

-----
Your Training Programs for Home Workouts
-----
1. Total Body Transformation (LKR 2000.00):
  * Transform your physique with a comprehensive program targeting all major muscle groups, incorporating strength, cardio, and flexibility training. :- LKR 20000.0
2. Cardio Blast Circuit (LKR 1500.00):
  * Ignite fat burning and improve cardiovascular fitness with high-intensity circuit workouts designed to torch calories and boost endurance. :- LKR 19500.0
3. Strength Training for Beginners (LKR 1800.00):
  * Learn the fundamentals of strength training with a focus on proper technique and form, laying the foundation for muscle growth and development. :- LKR 19000.0
4. Flexibility and Mobility Mastery (LKR 1000.00):
  * Enhance your flexibility and joint mobility through a variety of stretching routines, helping to prevent injuries and improve overall movement. :- LKR 10000.0

(To quit the current category, enter -1.)
Enter the Training Programs for Home Workouts you want to select: 2
Enter the Training Programs for Home Workouts you want to select: 3
Enter the Training Programs for Home Workouts you want to select: -1

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```

```
Chamaththa OSGI - Eclipse IDE
File Edit Navigate Search Project Run Window Help
Markers Properties Servers Data Source Explorer Snippets Terminal Console X
New configuration [OSGI Framework] D:\Compressed\ eclipse\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64.17.0.7\20230425-1502\jre\bin\javaw.exe (Mar 10, 2024, 12:07:56 PM) [pid: 9532]

-----
Your Training Programs for Home Workouts
-----
1. Total Body Transformation (LKR 2000.00):
  * Transform your physique with a comprehensive program targeting all major muscle groups, incorporating strength, cardio, and flexibility training. :- LKR 20000.0
2. Cardio Blast Circuit (LKR 1500.00):
  * Ignite fat burning and improve cardiovascular fitness with high-intensity circuit workouts designed to torch calories and boost endurance. :- LKR 19500.0
3. Strength Training for Beginners (LKR 1800.00):
  * Learn the fundamentals of strength training with a focus on proper technique and form, laying the foundation for muscle growth and development. :- LKR 19000.0
4. Flexibility and Mobility Mastery (LKR 1000.00):
  * Enhance your flexibility and joint mobility through a variety of stretching routines, helping to prevent injuries and improve overall movement. :- LKR 10000.0

(To quit the current category, enter -1.)
Enter the Training Programs for Home Workouts you want to select: 2
Enter the Training Programs for Home Workouts you want to select: 3
Enter the Training Programs for Home Workouts you want to select: -1

Press 0 to get the balance and buy next packages.
Enter the Training Programs for Home Workouts you want to purchase next: 0

-----
Summary Report
-----
Selected Package:
- Intermediate Fitness Equipment Bundle - Cardio Blast Circuit
- Intermediate Fitness Equipment Bundle - Flexibility and Mobility Mastery

Total Price: LKR 43800.00
Discount: LKR 2190.00
Final Price: LKR 41610.00

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