

P. HEMA SANJANA REDDY

192371037

CSA-0963 JAVA PROGRAMING FOR SYSTEM INTERFACES

SECTION 4: CREATING AN INVENTORY PROJECT.

Project-1.

PROGRAM:

```
public class Product {  
    // Instance field declarations  
    private int itemNumber;        private  
    String name;  
    private int numberOfUnitsInStock;  
    private double price;  
  
    public Product() {  
        this.itemNumber = 0;        this.name  
        = "";  
        this.numberOfUnitsInStock = 0;  
        this.price = 0.0;  
    }  
  
    public Product(int number, String name, int qty, double price) {  
        this.itemNumber = number;
```

```
        this.name = name;
this.numberofUnitsInStock = qty;        this.price
= price;
    }
```

```
    // Getter for itemNumber

    // Returns the item number of the product
public int getItemNumber() {        return
itemNumber;
    }
```

```
    // Setter for itemNumber    // Sets the item
number of the product    public void
setItemNumber(int itemNumber) {
this.itemNumber = itemNumber;
    }
```

```
    public String getName() {
return name;
    }
```

```
    // Setter for name    // Sets the
name of the product    public void
setName(String name) {
this.name = name;
    }
```

```

    // Returns the quantity of the product in stock
public int getNumberOfUnitsInStock() {
return numberOfUnitsInStock;
}

    // Setter for numberOfUnitsInStock

    // Sets the quantity of the product in stock    public void
setNumberOfUnitsInStock(int numberOfUnitsInStock) {
this.numberOfUnitsInStock = numberOfUnitsInStock;
}

    // Getter for price

    // Returns the price of the product
public double getPrice() {
return price;
}

    // Setter for price

    // Sets the price of the product
public void setPrice(double price) {
this.price = price;
}

    // Overrides the toString method to provide product details
@Override    public
String toString() {
return "Item Number: " +
itemNumber +

```

```

        "\nName: " + name +

        "\nQuantity in stock: " + numberOfUnitsInStock +

        "\nPrice: " + price;

    }

}

// ProductTester.java  public class

ProductTester {    public static void

main(String[] args) {

    // Creating Product objects

    Product product1 = new Product(); // Default constructor

    Product product2 = new Product(); // Default constructor

    Product product3 = new Product(1, "Wireless Mouse", 150, 25.99);

    Product product4 = new Product(2, "USB Flash Drive (64GB)", 75, 12.49);

    Product product5 = new Product(3, "Notebook (A5, 100 pages)", 200, 4.99);

    Product product6 = new Product(4, "Headphones (Over-ear, Noise-canceling)", 50,

89.99);

    // Displaying details of each product to the console

    System.out.println(product1.toString());

    System.out.println();

    System.out.println(product2.toString());

    System.out.println();

    System.out.println(product3.toString());

    System.out.println();

    System.out.println(product4.toString());

    System.out.println();

    System.out.println(product5.toString());

    System.out.println();

    System.out.println(product6.toString());

```

```
}  
}
```

Output:

```
Item Number: 0  
Name:  
Quantity in stock: 0  
Price: 0.0  
  
Item Number: 1  
Name: Wireless Mouse  
Quantity in stock: 150  
Price: 25.99  
  
Item Number: 2  
Name: USB Flash Drive (64GB)  
Quantity in stock: 75  
Price: 12.49  
  
Item Number: 3  
Name: Notebook (A5, 100 pages)  
Quantity in stock: 200  
Price: 4.99  
  
Item Number: 4  
Name: Headphones (Over-ear, Noise-canceling)  
Quantity in stock: 50  
Price: 89.99  
  
=== Code Execution Successful ===
```

Java Fundamentals

Section 5: Creating an Inventory Project

PROGRAM:

```
public class Product {  
    private int itemNumber;    private String name;  
    private int qty;    private double price;    private  
    boolean active = true; // Default value is true
```

```

// Constructor with parameters    public Product(int itemNumber,
String name, int qty, double price) {    this.itemNumber =
itemNumber;    this.name = name;    this.qty = qty;
this.price = price;
    }

// Getter and setter for active
public boolean isActive() {
return active;
    }

    public void setActive(boolean active) {
this.active = active;
    }

// Calculate inventory value
public double getInventoryValue() {
return price * qty;
    }

// String representation of the Product
@Override    public String toString() {
return "Item Number : " + itemNumber + "\n" +
        "Name : " + name + "\n" +
        "Quantity in stock: " + qty + "\n" +
        "Price : " + price + "\n" +
        "Stock Value : " + getInventoryValue() + "\n" +
        "Product Status : " + (active ? "Active (true)" : "Discontinued (false)");
    }

```

```
}  
  
import java.util.Scanner;  
  
public class ProductTester {    public  
static void main(String[] args) {  
    Scanner in = new Scanner(System.in);  
  
    // Temporary variables for product attributes  
    int tempNumber;    String tempName;  
    int tempQty;    double tempPrice;  
  
    // Input for p1  
    System.out.println("Enter Item Number: ");  
    tempNumber = in.nextInt();  
  
    // Clear the input buffer  
    in.nextLine();  
  
    System.out.println("Enter Name: ");  
    tempName = in.nextLine();  
  
    System.out.println("Enter Quantity: ");  
    tempQty = in.nextInt();  
  
    System.out.println("Enter Price: ");  
    tempPrice = in.nextDouble();  
  
    // Create p1
```

```
Product p1 = new Product(tempNumber, tempName, tempQty, tempPrice);
System.out.println(p1); // Display p1 information

// Clear the input buffer before getting values for p2
in.nextLine();

// Input for p2
System.out.println("Enter Item Number for second product: ");    tempNumber
= in.nextInt();

// Clear the input buffer
in.nextLine();

System.out.println("Enter Name for second product: ");
tempName = in.nextLine();

System.out.println("Enter Quantity for second product: ");
tempQty = in.nextInt();

System.out.println("Enter Price for second product: ");
tempPrice = in.nextDouble();

// Create p2
Product p2 = new Product(tempNumber, tempName, tempQty, tempPrice);
System.out.println(p2); // Display p2 information

// Set active status for p2 to false
p2.setActive(false);

System.out.println(p2); // Display p2 with updated active status
```



```
        // Close Scanner
in.close();
    }
}
```

```
Enter Item Number:
1
Enter Name:
BOOK
Enter Quantity:
2
Enter Price:
30
Item Number: 1
Name: BOOK
Quantity in stock: 2
Price: 30.0
Enter Item Number for second product:
2
Enter Name for second product:
PEN
Enter Quantity for second product:
10
Enter Price for second product:
5
Item Number: 2
Name: PEN
Quantity in stock: 10
Price: 5.0

=== Code Execution Successful ===
```

PROJECT-3:

Java Fundamentals

Section 6: Creating an Inventory Project

PROGRAM:

```
import java.util.Scanner; import
java.util.InputMismatchException;
```

```

class Product {
    private String name;
    private int quantity;
    private double price;
    private int itemNumber;

    // Constructor
    public Product(String name, int quantity, double price, int
itemNumber) {
        this.name = name;
        this.quantity = quantity;
        this.price = price;
        this.itemNumber = itemNumber;
    }

    @Override
    public String toString() {
        return "Product
Name: " + name + ", Quantity: " + quantity +
        ", Price: $" + price + ", Item Number: " + itemNumber;
    }
}

public class ProductTester {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int maxSize = -1; //
        Initializing with a value to force a correct input later

        // Prompt for the number of products
        System.out.println("Enter the number of products you would like to add");
        System.out.println("Enter 0 (zero) if you do not wish to add products");

        // Input
        loop
        do {
            try {
                maxSize = scanner.nextInt();
            }

```

```

        if (maxSize < 0) {
            System.out.println("Incorrect Value entered");
        }

    } catch (InputMismatchException e) {
        System.out.println("Incorrect data type entered!");
    }
    scanner.next(); // Clear the input buffer

    // Continue the loop after clearing the buffer
}

} while (maxSize < 0); // Exit on 0 or greater

// Handle the case of no products
if (maxSize == 0) {
    System.out.println("No products required!");
} else { // Handle positive maxSize

    // Create an array to store Product objects
    Product[] products = new Product[maxSize];

    // Populate the array with product details
    for (int i = 0; i < maxSize; i++) {
        scanner.nextLine(); // Clear the input buffer

        System.out.print("Enter the name of product " + (i + 1) + ": ");
        String name = scanner.nextLine();

        System.out.print("Enter the quantity of product " + (i + 1) + ": ");
        int quantity = scanner.nextInt();
    }
}

```

```
        System.out.print("Enter the price of product " + (i + 1) + ": ");  
double price = scanner.nextDouble();
```

```
        System.out.print("Enter the item number of product " + (i + 1) + ": ");  
int itemNumber = scanner.nextInt();
```

```
        // Create a new product object and place it in the array  
products[i] = new Product(name, quantity, price, itemNumber);  
    }
```

```
        // Display the products using a for-each loop  
System.out.println("\nProducts Added:");        for  
(Product product : products) {  
    System.out.println(product);  
}  
}
```

```
        // Close the scanner  
scanner.close();  
    }  
}
```

```
Enter the number of products you would like to add
Enter 0 (zero) if you do not wish to add products
3
Enter the name of product 1: BAT
Enter the quantity of product 1: 1
Enter the price of product 1: 2000
Enter the item number of product 1: 45
Enter the name of product 2: BALL
Enter the quantity of product 2: 2
Enter the price of product 2: 30
Enter the item number of product 2: 10
Enter the name of product 3: JERSY
Enter the quantity of product 3: 3
Enter the price of product 3: 500
Enter the item number of product 3: 32

Products Added:
Product Name: BAT, Quantity: 1, Price: $2000.0, Item Number: 45
Product Name: BALL, Quantity: 2, Price: $30.0, Item Number: 10
Product Name: JERSY, Quantity: 3, Price: $500.0, Item Number: 32

=== Code Execution Successful ===|
```

PROJECT-4:

Java Fundamentals

Section 7 Part 1: Creating an Inventory Project.

```
import java.util.Scanner;
```

```
class Product {
    private int number;
    private String name;
    private int quantity;
    private double price;

    // Constructor
    public Product(int number, String name, int quantity,
double price) {
        this.number = number;
        this.name = name;
        this.quantity = quantity;
        this.price = price;
    }
}
```

```
}
```

```
// Getters    public
```

```
String getName() {
```

```
return name;
```

```
}
```

```
    public int getQuantity() {
```

```
return quantity;
```

```
}
```

```
// Method to add quantity    public void
```

```
addToInventory(int quantity) {
```

```
    if (quantity > 0) {
```

```
this.quantity += quantity;
```

```
    } else {
```

```
        System.out.println("Quantity must be greater than zero.");
```

```
    }
```

```
}
```

```
// Method to deduct quantity    public void
```

```
deductFromInventory(int quantity) {    if
```

```
(quantity > 0 && quantity <= this.quantity) {
```

```
this.quantity -= quantity;
```

```
    } else {
```

```
        System.out.println("Invalid quantity for deduction.");
```

```
    }
```

```
}
```

```
}
```

```

public class ProductTester {    public static void
main(String[] args) {        Scanner scanner = new
Scanner(System.in);        int maxSize =
getNumProducts(scanner);
        Product[] products = new Product[maxSize];

        addToInventory(products, scanner);
displayInventory(products);

        int option;
do {
        option = getMenuOption(scanner);
switch (option) {            case 1:
                displayInventory(products);
                break;

case 2:
                addInventory(products, scanner);
                break;

case 3:
                deductInventory(products, scanner);
break;

                case 4:
                discontinueProduct(products, scanner);
break;
        }
    } while (option != 0);

    scanner.close();

```

```
}
```

```
    public static void displayInventory(Product[] products) {  
System.out.println("Current Inventory:");        for (int i = 0;  
i < products.length; i++) {            if (products[i] != null) {  
                System.out.println(i + ": " + products[i].getName() + " - Quantity: " +  
products[i].getQuantity());  
            }  
        }  
    }  
}
```

```
    public static void addToInventory(Product[] products, Scanner scanner) {  
int tempNumber;        String tempName;        int tempQty;        double  
tempPrice;
```

```
        for (int i = 0; i < products.length; i++) {  
System.out.print("Enter product number: ");        tempNumber =  
scanner.nextInt();        System.out.print("Enter product name: ");  
tempName = scanner.next();
```

```
        System.out.print("Enter product quantity: ");  
tempQty = scanner.nextInt();
```

```
        System.out.print("Enter product price: ");  
tempPrice = scanner.nextDouble();
```

```
        products[i] = new Product(tempNumber, tempName, tempQty, tempPrice);  
    }  
}
```



```

    public static int getNumProducts(Scanner scanner) {
int maxSize;        do {
        System.out.print("Enter max number of products: ");
maxSize = scanner.nextInt();    } while (maxSize <= 0);
return maxSize;
    }

```

```

    public static int getMenuOption(Scanner scanner) {
int option = -1;
    while (option < 0 || option > 4) {
        System.out.println("1. View Inventory");
        System.out.println("2. Add Stock");
        System.out.println("3. Deduct Stock");
        System.out.println("4. Discontinue Product");
        System.out.println("0. Exit");
        System.out.print("Please enter a menu option: ");
try {
        option = scanner.nextInt();
    } catch (Exception e) {
        System.out.println("Invalid input. Please enter a number between 0 and 4.");
scanner.next(); // Clear the invalid input
    }
}
return option;
    }

```

```

    public static int getProductNumber(Product[] products, Scanner scanner) {        int
productChoice = -1;

```

```

        while (productChoice < 0 || productChoice >= products.length) {
System.out.println("Select a product by number:");          for (int i =
0; i < products.length; i++) {          if (products[i] != null) {
                System.out.println(i + ": " + products[i].getName());
            }
        }
    }
    try {
        productChoice = scanner.nextInt();
    } catch (Exception e) {
        System.out.println("Invalid input. Please enter a valid product number.");
scanner.next(); // Clear the invalid input

    }
}

return productChoice;
}

```

```

    public static void addInventory(Product[] products, Scanner scanner) {
int productChoice;          int updateValue = -1;

        productChoice = getProductNumber(products, scanner);

        while (updateValue < 0) {
            System.out.print("Enter quantity to add: ");
updateValue = scanner.nextInt();
        }

        products[productChoice].addToInventory(updateValue);
    }
}

```

```

    public static void deductInventory(Product[] products, Scanner scanner) {
int productChoice;        int updateValue = -1;

        productChoice = getProductNumber(products, scanner);

        while (updateValue < 0) {
            System.out.print("Enter quantity to deduct: ");
updateValue = scanner.nextInt();

        }

        products[productChoice].deductFromInventory(updateValue);
    }

    public static void discontinueProduct(Product[] products, Scanner scanner) {
int productChoice = getProductNumber(products, scanner);

        products[productChoice] = null; // Setting the product to null to discontinue it
System.out.println("Product discontinued.");
    }
}

```

OUTPUT:

Enter max number of products: 5

Enter product number: 89

Enter product name: BAT

Enter product quantity: 2

Enter product price: 30

Enter product number: 22

Enter product name: BALL

Enter product quantity: 10

Enter product price: 20

Enter product number: 55

Enter product name: JERSY

Enter product quantity: 2

Enter product price: 500

Enter product number: 99

Enter product name: WICKET

Enter product quantity: 2

Enter product price: 300

Enter product number: 33

Enter product name: SHOE

Enter product quantity: 2

Enter product price: 600

```
Current Inventory:
0: BAT - Quantity: 2
1: BALL - Quantity: 10
2: JERSY - Quantity: 2
3: WICKET - Quantity: 2
4: SHOE - Quantity: 2
1. View Inventory
2. Add Stock
3. Deduct Stock
4. Discontinue Product
0. Exit
Please enter a menu option: 2
Select a product by number:
0: BAT
1: BALL
2: JERSY
3: WICKET
4: SHOE
0
Enter quantity to add: 2
1. View Inventory
2. Add Stock
3. Deduct Stock
4. Discontinue Product
0. Exit
Please enter a menu option: 3
```

```
Please enter a menu option: 3
Select a product by number:
0: BAT
1: BALL
2: JERSY
3: WICKET
4: SHOE
3
Enter quantity to deduct: 1|
```

PROJECT-5:

PROGRAM FOR CD AND DVD:

```
import java.util.ArrayList; import
java.util.Scanner; class Product {
```

```
protected String name;
protected double price;
protected int quantity;
protected int itemNumber;
protected String status =
"Available";
```

```
    public Product(String name, double price, int quantity, int itemNumber) {
this.name = name;        this.price = price;        this.quantity = quantity;
this.itemNumber = itemNumber;
    }
```

```
    public double calculateInventoryValue() {
return price * quantity;
    }
```

```
    @Override    public String toString() {
return "Item Number: " + itemNumber + "\n" +
        "Name: " + name + "\n" +
        "Quantity in stock: " + quantity + "\n" +
        "Price: " + price + "\n" +
        "Stock Value: " + String.format("%.2f", calculateInventoryValue()) + "\n" +
        "Product Status: " + status;
    }
}
```

```
class DVD extends Product {
private int length;    private
```

```
int ageRating;    private
String filmStudio;
```

```
    public DVD(String name, double price, int quantity, int itemNumber, int length, int
ageRating, String filmStudio) {        super(name, price, quantity, itemNumber);
this.length = length;        this.ageRating = ageRating;        this.filmStudio =
filmStudio;
    }
```

```
    @Override    public String
toString() {        return
super.toString() + "\n" +
        "Movie Length: " + length + " minutes\n" +
        "Age Rating: " + ageRating + "\n" +
        "Film Studio: " + filmStudio;
    }
}
```

```
class CD extends Product {
private String artist;    private
int numSongs;    private
String label;    public
CD(String name, double price,
int quantity, int itemNumber,
String artist, int numSongs,
String label) {
super(name, price, quantity,
itemNumber);

    this.artist = artist;
```

```
        this.numSongs = numSongs;
    this.label = label;
}
```

```
    @Override    public String
toString() {    return
super.toString() + "\n" +
        "Artist: " + artist + "\n" +
        "Songs on Album: " + numSongs + "\n" +
        "Record Label: " + label;
    }
}
```

```
Public class ProductTester {    private ArrayList<Product>
products = new ArrayList<>();    private Scanner scanner =
new Scanner(System.in);
```

```
    public void addToInventory() {
int stockChoice = -1;
```

```
    while (stockChoice != 1 && stockChoice != 2) {
        System.out.println("1: CD\n2: DVD");
        System.out.print("Please enter the product type: ");
        stockChoice = scanner.nextInt();
scanner.nextLine(); // Consume newline
```

```
    if (stockChoice != 1 && stockChoice != 2) {
        System.out.println("Only numbers 1 or 2 allowed!");
    }
}
```



```
}
```

```
    if (stockChoice == 1) {  
addCDToInventory();  
    } else {  
        addDVDToInventory();  
    }  
}
```

```
private void addCDToInventory() {  
    System.out.print("Please enter the CD name: ");  
    String name = scanner.nextLine();  
  
    System.out.print("Please enter the artist name: ");  
    String artist = scanner.nextLine();  
  
    System.out.print("Please enter the record label name: ");  
    String label = scanner.nextLine();  
  
    System.out.print("Please enter the number of songs: ");  
int numSongs = scanner.nextInt();    System.out.print("Please  
enter the quantity of stock for this product: ");    int quantity =  
scanner.nextInt();  
  
    System.out.print("Please enter the price for this product: ");  
double price = scanner.nextDouble();  
  
    System.out.print("Please enter the item number: ");  
int itemNumber = scanner.nextInt();
```

```
        CD cd = new CD(name, price, quantity, itemNumber, artist, numSongs, label);
products.add(cd);
        System.out.println("CD added to inventory.");
    }
```

```
private void addDVDToInventory() {
    System.out.print("Please enter the DVD name: ");
    String name = scanner.nextLine();

    System.out.print("Please enter the film studio name: ");
    String filmStudio = scanner.nextLine();

    System.out.print("Please enter the age rating: ");
    int ageRating = scanner.nextInt();

    System.out.print("Please enter the length in minutes: ");
    int length = scanner.nextInt();
```

```
    System.out.print("Please enter the quantity of stock for this product: ");
    int quantity = scanner.nextInt();
```

```
    System.out.print("Please enter the price for this product: ");
    double price = scanner.nextDouble();
```

```
    System.out.print("Please enter the item number: ");
    int itemNumber = scanner.nextInt();
```

```

        DVD dvd = new DVD(name, price, quantity, itemNumber, length, ageRating,
filmStudio);        products.add(dvd);

        System.out.println("DVD added to inventory.");
    }

```

```

    public void displayInventory() {
for (Product product : products) {
        System.out.println(product);

        System.out.println("\n" + "=".repeat(40) + "\n");
    }
}

```

```

public static void main(String[] args) {
    ProductTester tester = new ProductTester();

    while (true) {
        System.out.println("1: Add Product\n2: Display Inventory\n3: Exit");
System.out.print("Please enter your choice: ");        int choice =
tester.scanner.nextInt();

        tester.scanner.nextLine(); // Consume newline

        if (choice == 1) {
tester.addToInventory();        }
        else if (choice == 2) {
tester.displayInventory();        }
        else if (choice == 3) {
break;
        } else {
            System.out.println("Invalid choice. Please try again.");

```

```
    }  
    }  
    tester.scanner.close();  
    }  
}
```

Output:

```
1: Add Product
2: Display Inventory
3: Exit
Please enter your choice: 1
1: CD
2: DVD
Please enter the product type: 2
Please enter the DVD name: OG
Please enter the film studio name: DVV
Please enter the age rating: 15
Please enter the length in minutes: 125
Please enter the quantity of stock for this product: 200
Please enter the price for this product: 300
Please enter the item number: 21
DVD added to inventory.
1: Add Product
2: Display Inventory
3: Exit
Please enter your choice: 1
1: CD
2: DVD
Please enter the product type: 1
Please enter the CD name: HVHM
Please enter the artist name: DSP
Please enter the record label name: GABBARSINGH
Please enter the number of songs: 5
```

```
Please enter the number of songs: 5
Please enter the quantity of stock for this product: 20
Please enter the price for this product: 100
Please enter the item number: 25
CD added to inventory.
1: Add Product
2: Display Inventory
3: Exit
```

```
1: Add Product
2: Display Inventory
3: Exit
Please enter your choice: 2
Item Number: 21
Name: OG
Quantity in stock: 200
Price: 300.0
Stock Value: 60000.00
Product Status: Available
Movie Length: 125 minutes
Age Rating: 15
Film Studio: DVV

=====

Item Number: 25
Name: HVHM
Quantity in stock: 20
Price: 100.0
Stock Value: 2000.00
Product Status: Available
Artist: DSP
Songs on Album: 5
Record Label: GABBARSINGH
```

Final project:

```
import java.util.ArrayList; import
java.util.InputMismatchException; import
java.util.Scanner;
```

```
public class MealPlannerApp {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        MealPlanner mealPlanner = new MealPlanner();
        System.out.println("Welcome to the Meal Planner!");
```

```

        int calorieLimit = 0;
while (true) {
    System.out.print("Please enter your calorie limit for the day: ");
    try {
        calorieLimit = scanner.nextInt();
        if (calorieLimit <= 0) {
            System.out.println("Calorie limit must be a positive number. Try again.");
        } else {
            break;
        }
    } catch (InputMismatchException e) {
        System.out.println("Invalid input. Please enter a number.");
        scanner.next(); // Clear invalid input
    }
}

mealPlanner.displayFoodOptions();

while (true) {
    System.out.print("Enter the index of the food item to add to your meal plan (or -1
to finish): ");
    int inputIndex = scanner.nextInt();
    if (inputIndex == -1) {
        break;
    }
    if (inputIndex >= 0 && inputIndex < mealPlanner.foodList.size()) {
        mealPlanner.addFoodToMealPlan(mealPlanner.getFood(inputIndex));
        if (!mealPlanner.isUnderCalorieLimit(calorieLimit)) {
            System.out.println("Warning: You have exceeded your calorie limit!");
        }
    }
}

```

```
    } else {  
        System.out.println("Invalid index. Please try again.");  
    }  
}
```

```
mealPlanner.displayMealPlan();  
System.out.println("Total calories: " + mealPlanner.totalCalories());
```

```
scanner.close();  
}
```

```
static class Food {  
private String name;  
private int calories;
```

```
    public Food(String name, int calories) {  
this.name = name;        this.calories =  
calories;  
    }
```

```
    public String getName() {  
return name;  
    }
```

```
    public int getCalories() {  
return calories;  
    }
```



```
        public String getDescription() {  
return name + " (Calories: " + calories + ")";  
        }  
    }  
}
```

```
    static class MealPlanner {  
private ArrayList<Food> foodList;  
private ArrayList<Food> mealPlan;
```

```
        public MealPlanner() {  
foodList = new ArrayList<>();  
mealPlan = new ArrayList<>();  
initializeFoodList();  
        }  
    }
```

```
        private void initializeFoodList() {  
foodList.add(new Food("Apple", 95));  
foodList.add(new Food("Banana", 105));  
foodList.add(new Food("Chicken Breast", 165));  
foodList.add(new Food("Rice (1 cup)", 205));  
foodList.add(new Food("Broccoli", 55));  
        }  
    }
```

```
        public void addFoodToMealPlan(Food food) {  
mealPlan.add(food);  
        }  
    }
```

```
        public void displayMealPlan() {  
System.out.println("Your Meal Plan:");  
for (Food food : mealPlan) {
```

```

        System.out.println(food.getDescription());
    }
}

```

```

    public int totalCalories() {
        int total = 0;
        for (Food food
: mealPlan) {
            total +=
food.getCalories();
        }
        return total;
    }

```

```

    public boolean isUnderCalorieLimit(int limit) {
        return totalCalories() <= limit;
    }

```

```

    public void displayFoodOptions() {
        System.out.println("Available Foods:");
        for
(int i = 0; i < foodList.size(); i++) {
            System.out.println(i + ": " + foodList.get(i).getDescription());
        }
    }

```

```

    public Food getFood(int index) {
        return foodList.get(index);
    }
}

```

Output:

```
java -cp /tmp/f3yh3tEJB/MealPlannerApp
Welcome to the Meal Planner!
Please enter your calorie limit for the day: 250
Available Foods:
0: Apple (Calories: 95)
1: Banana (Calories: 105)
2: Chicken Breast (Calories: 165)
3: Rice (1 cup) (Calories: 205)
4: Broccoli (Calories: 55)
Enter the index of the food item to add to your meal plan (or -1 to finish): 2
Enter the index of the food item to add to your meal plan (or -1 to finish): 4
Enter the index of the food item to add to your meal plan (or -1 to finish): 1
Warning: You have exceeded your calorie limit!
Enter the index of the food item to add to your meal plan (or -1 to finish): |
```