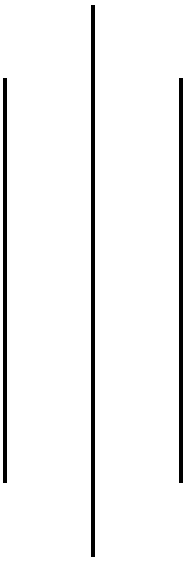
ORCHID INTERNATIONAL College

(Affiliated to Tribhuvan University)

Advanced Java Programming

Lab 002

Data Handling and Functions



Submitted by:

Abhinna Ojha, 20788/075

BSc. CSIT - VII

Submitted to:

Mr. Krishna Pandey

Department of CSIT

1. Function overloading

1.1. Write a program to accept 5 employee IDs and the corresponding names and their salaries from the user and store them in three arrays. Pass these arrays to a function display() as arguments. This display() will display the content of the arrays in the following format.

ID	Name	Salary
00	John	600000
002	Clark	550000
003	Nancy	500000
004	Joe	500000
005	Mary	300000

1.2. Write another function display() with Employee ID array and Employee name array as arguments. (Note: here we are using concept of function overloading). This function will display the content of the 2 arrays in the following format.

ID	Name
00	John
002	Clark
003	Nancy
004	Joe
005	Mary

1.3. Write another function named display() which takes 4 arguments. The arguments are named as String and 3 arrays (Employee id, name and salary). Function prototype looks like: display (String name, int regno[], String Empname[], double salary[]).

This function will search for the name in the Empname array and will display its corresponding id and salary in the below given format. For example, if Divya is given as the name to search then display() function will display the following record.

ID	Name	Salary
00	John	600000

Note: main() should have the following steps:

- **Declaring the arrays.**
- **Accepting data for the arrays.**
- **Calling the 2 display() functions which takes 3 and 2 arguments.**
- **Accept a user name to search in the array and display the record by calling the display() function which takes 4 arguments.**

```
import java.util.Scanner;
public class Main
{
   public static void main(String[] args)
   {
//       declaring the arrays
      int[] regno = new int[5];
      String[] empName = new String[5];
      double[] salary = new double[5];
//       accepting data for arrays
      inputData(regno, empName, salary);
      System.out.println("");
//       Q1 output
      display(regno, empName, salary);
//       Q2 output
      display(regno, empName);
```

```
//        accept name to search
        Scanner scanner = new Scanner(System.in);
        System.out.print("\n\n\nEnter the name to search: ");
        String name = scanner.nextLine();
//        Q3 output
        display(name, regno, empName, salary);
    }
//    method to get input from the user
    public static void inputData(int[] regno, String[] empName, double[] salary)
    {
        Scanner scanner = new Scanner(System.in);
        for (int i = 0; i < 5; i++)
        {
//            nextLine() for String and nextInt() for Integer
            System.out.print("\nEnter employee id: ");
            regno[i] = scanner.nextInt();
//            using a dummy nextLine() as nextLine() takes previous line as input after nextInt()
            empName[i] = scanner.nextLine();
            System.out.print("Enter employee name: ");
            empName[i] = scanner.nextLine();
            System.out.print("Enter employee salary: ");
            salary[i] = scanner.nextDouble();
        }
    }
    public static void display(int[] regno, String[] empName, double[] salary)
    {
        System.out.println("\n\n3 argument display");
        System.out.println("ID\t\tName\t\t\tSalary");
        for (int i = 0; i < 5; i++)
        {
//            using if to adhere to the 3 digit format of id
            if (regno[i] < 10)
            {
                System.out.print("00");
            }
            else if (regno[i] < 100)
            {
                System.out.print("0");
            }
            System.out.println(regno[i] + "\t\t" + empName[i] + "\t\t\t" + salary[i] );
        }
    }
//    overloading display(int[], String[], double[])
    public static void display(int[] regno, String[] empName)
    {
        System.out.println("\n\n2 argument display");
        System.out.println("ID\t\tName");
        for (int i = 0; i < 5; i++)
        {
//            using if to adhere to the 3 digit format of id
```

```
            if (regno[i] < 10)
            {
               System.out.print("00");
            }
            else if (regno[i] < 100)
            {
               System.out.print("0");
            }
            System.out.println(regno[i] + "\t\t" + empName[i]);
         }
      }
//    overloading display() to search and display
      public static void display (String name, int[] regno, String[] empName, double[] salary)
      {
         System.out.println("\n\n4 argument display");
         System.out.println("ID\t\tName\t\t\tSalary");
         for (int i = 0; i < 5; i++)
         {
            if (name.equalsIgnoreCase(empName[i]))
            {
               if (regno[i] < 10)
               {
                  System.out.print("00");
               }
               else if (regno[i] < 100)
               {
                  System.out.print("0");
               }
               System.out.println(regno[i] + "\t\t" + empName[i] + "\t\t\t" + salary[i] );
            }
         }
      }
}
```

```
"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2022.2.4\lib\idea_rt.jar=6935:C:\Program File

Enter employee id: 1
Enter employee name: John
Enter employee salary: 600000

Enter employee id: 2
Enter employee name: Clark
Enter employee salary: 550000

Enter employee id: 3
Enter employee name: Nancy
Enter employee salary: 500000

Enter employee id: 4
Enter employee name: Joe
Enter employee salary: 500000

Enter employee id: 5
Enter employee name: Mary
Enter employee salary: 300000
```

```
3 argument display
ID      Name            Salary
001     John            600000.0
002     Clark           550000.0
003     Nancy           500000.0
004     Joe         500000.0
005     Mary            300000.0


2 argument display
ID      Name
001     John
002     Clark
003     Nancy
004     Joe
005     Mary



Enter the name to search: John
```

```
Enter the name to search: John


4 argument display
ID      Name            Salary
001     John            600000.0

Process finished with exit code 0
```

2. Case studies

2.1. Case 1, Drinks menu

```
/*
 *  Title:
 *      Case study 1
 *
 *  Description:
 *      Alex wants an application for his restaurant in which he needs to display the drinks
 *      available in his restaurant to the customers along with their prizes.
 *      Create an application which will display the menu items along with the prizes and
 *      once the order is done, it will calculate the total amount of the order and display it to
 *      the customers.
 *
 *  Date modified; Author(s); Modification details
 *      2022-12-06; abhinna; Created the program
 * */
import java.util.Scanner;
public class Case1
{
    public static void main(String[] args)
    {
//    taking scanner for input
        Scanner scanner = new Scanner(System.in);
//        for infinite loop until exit
        boolean loopMenu = true;
//        list of menu data
        String[] menuNames = {"Coffee", "Tea", "Pepsi", "Coca Cola"};
        int[] menuPrices = {50, 25, 50, 55};
        int[] quantity = new int[menuNames.length];
        DrinksMenu[] drinksMenus = new DrinksMenu[menuNames.length];
        for (int i = 0; i < menuNames.length; i++)
        {
            drinksMenus[i] = new DrinksMenu(menuNames[i], menuPrices[i]);
            quantity[i] = 0;
        }
//        infinite loop for menu
        while (loopMenu)
        {
//            displaying menu items and price
            System.out.println("Choose from menu or hit 0 to finalise orders");
            System.out.println("SN" + "\t\t\t" + "Item" + "\t\t\t" + "Price");
            for (int i = 0; i < menuNames.length; i++)
            {
                drinksMenus[i].displayMenu(i);
            }
//            taking order input
            System.out.print("Choice: ");
            int choice = scanner.nextInt();
```

```
            for (int i = 0; i < menuNames.length; i++)
            {
                if (choice - 1 == i)
                {
                    System.out.println("Enter how much of " + drinksMenus[i].name + " do you
wish to purchase: ");
                    quantity[i] = quantity[i] + scanner.nextInt();
                }
                else if (choice == 0)
                {
                    loopMenu = false;
                }
            }//for
        }//while
//        calculating total
        double total = 0;
        for (int i = 0; i < menuNames.length; i++)
        {
            total = total + drinksMenus[i].price * quantity[i];
        }
//        printing the total
        System.out.println("The total is: " + total);
    }
}
class DrinksMenu
{
    String name;
    double price;
    DrinksMenu()
    {
//        default constructor required for inheritance
    }
    DrinksMenu(String name, double price)
    {
        this.name = name;
        this.price = price;
    }
    public void displayMenu(int i)
    {
        System.out.println((i + 1) + "\t\t\t" + name + "\t\t\t" + price);
    }
}
```

```
"C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA 2022.2.4\lib\idea_rt.jar=6886:C:\Program Files
Choose from menu or hit 0 to finalise orders
SN          Item            Price
1           Coffee          50.0
2           Tea         25.0
3           Pepsi           50.0
4           Coca Cola           55.0
Choice: 2
Enter how much of Tea do you wish to purchase:
4
Choose from menu or hit 0 to finalise orders
SN          Item            Price
1           Coffee          50.0
2           Tea         25.0
3           Pepsi           50.0
4           Coca Cola           55.0
Choice: 1
Enter how much of Coffee do you wish to purchase:
4
Choose from menu or hit 0 to finalise orders
SN          Item            Price
1           Coffee          50.0
2           Tea         25.0
```

```
Choice: 2
Enter how much of Tea do you wish to purchase:
4
Choose from menu or hit 0 to finalise orders
SN          Item            Price
1           Coffee          50.0
2           Tea         25.0
3           Pepsi           50.0
4           Coca Cola           55.0
Choice: 1
Enter how much of Coffee do you wish to purchase:
4
Choose from menu or hit 0 to finalise orders
SN          Item            Price
1           Coffee          50.0
2           Tea         25.0
3           Pepsi           50.0
4           Coca Cola           55.0
Choice: 0
The total is: 300.0

Process finished with exit code 0
```

2.2. Case 2, Mobile phone

```
/*
 *  Title:
 *      Case study 2
 *
 *  Description:
 *      Consider a class named phone which have functionalities like make a call, receive a
 *      call and messaging.
 *      Based on this scenario John wants to develop an application which will have class
 *      named Mobile and methods like dial, receive and message which will
 *      demonstrate the functioning of these methods.
 *
 *      Use a reference object to call these methods(dial, receive and message and display).
 *
 *  Date modified; Author(s); Modification details
 *      2022-12-06; abhinna; Created the program
 *      2022-12-08; abhinna; Added body for message and display and implemented them
 * */

public class Case2
{
    public static void main(String[] args)
    {
        Mobile m1 = new Mobile("Ram", "9811111111");
        Mobile m2 = new Mobile("Shyam", "9822222222");
        m1.dial(m2);
        m2.message(m1, "I am busy, please call later.");
    }
}
class Mobile
{
    String name;
    String number;
//    constructor to define number and name
    Mobile(String name, String number)
    {
        this.name = name;
        this.number = number;
    }
//    dialing another person
    public void dial(Mobile mobile)
    {
        System.out.println("Dialing " + mobile.number + " " + name);
        mobile.receive(mobile);
    }
//    recieving call from someone
    public void receive(Mobile mobile)
    {
        System.out.println(mobile.number + " is calling you " + name);
```

```
    }
//    send message to someone
    public void message(Mobile mobile, String msg)
    {
        System.out.println("\nYou have sent the message " + msg + " to " + mobile.name + ", "
+ mobile.number);
    }
//    displaying name and number of self
    public void display()
    {
        System.out.println("\nName: " + name + ", Number: " + number);
    }
}
```