

# ASSIGNMENT

Java & PHP Lab

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Java Basics



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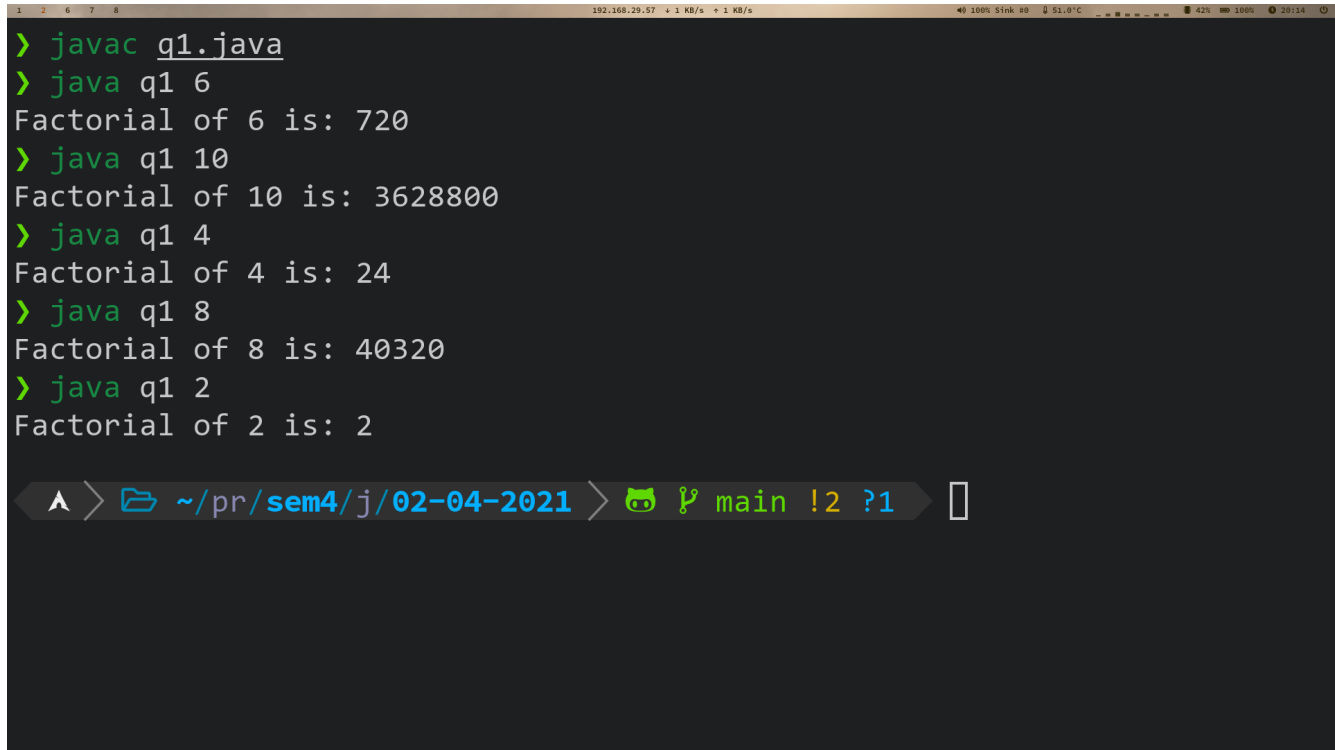
## 1. Command line arguments

Write a JAVA program to calculate the factorial of a number, input should be given though the command line argument.

### 1.1. Source Code

```
class q1 {  
    public static void main(String args[]){  
        int i,fact=1;  
        int num = Integer.parseInt(args[0]);  
        for(i=1;i<=num;i++) {  
            fact=fact*i;  
        }  
        System.out.println("Factorial of "+ num +" is: "+fact);  
    }  
}
```

## 1.2. Output

A terminal window with a dark background and light-colored text. The terminal shows the compilation and execution of a Java program named 'q1'. The user enters 'javac q1.java' to compile the code. Then, they enter 'java q1 6', 'java q1 10', 'java q1 4', 'java q1 8', and 'java q1 2' to run the program with different arguments. The program outputs the factorial of each number: 'Factorial of 6 is: 720', 'Factorial of 10 is: 3628800', 'Factorial of 4 is: 24', 'Factorial of 8 is: 40320', and 'Factorial of 2 is: 2'. The terminal window has a title bar at the top with system icons and a status bar at the bottom showing the current directory and shell prompt.

```
1 2 6 7 8
> javac q1.java
> java q1 6
Factorial of 6 is: 720
> java q1 10
Factorial of 10 is: 3628800
> java q1 4
Factorial of 4 is: 24
> java q1 8
Factorial of 8 is: 40320
> java q1 2
Factorial of 2 is: 2
A > ~/pr/sem4/j/02-04-2021 > main !2 ?1
```

Figure 1: Factorial of number

## 2. Constructors

Write a JAVA program to initialize and display the attribute values of a class “vehicle” variables using constructor.

### 2.1. Source Code

```
import java.util.Scanner;

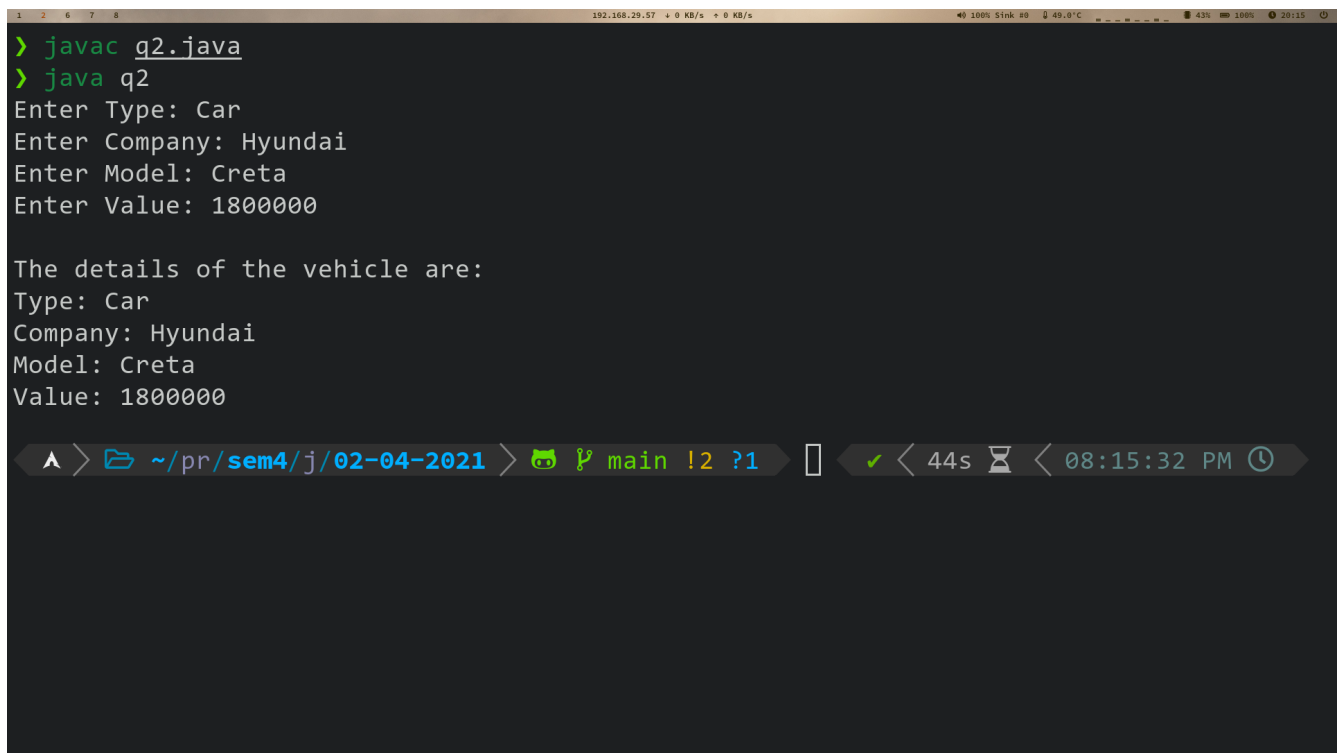
class vehicle {
    private String type, company, model;
    private int value;

    public vehicle(String t, String c, String m, int v) {
        type = t;
        company = c;
        model = m;
        value = v;
    }

    public void display() {
        System.out.println("Type: " + type);
        System.out.println("Company: " + company);
        System.out.println("Model: " + model);
        System.out.println("Value: " + value);
    }
}
```

```
}  
  
class q2 {  
    public static void main(String args[]) {  
  
        Scanner in = new Scanner(System.in);  
  
        System.out.print("Enter Type: ");  
        String t = in.nextLine();  
        System.out.print("Enter Company: ");  
        String c = in.nextLine();  
        System.out.print("Enter Model: ");  
        String m = in.nextLine();  
        System.out.print("Enter Value: ");  
        int v = in.nextInt();  
  
        vehicle veh = new vehicle(t, c, m, v);  
        System.out.println("\nThe details of the vehicle are: ");  
        veh.display();  
    }  
}
```

## 2.2. Output



```
> javac q2.java  
> java q2  
Enter Type: Car  
Enter Company: Hyundai  
Enter Model: Creta  
Enter Value: 1800000  
  
The details of the vehicle are:  
Type: Car  
Company: Hyundai  
Model: Creta  
Value: 1800000
```

Figure 2: Vechile class

### 3. Interface

Create an interface 'vehicle' and implement the methods of the interface in class 'bike' to get and display the attribute values.

#### 3.1. Source Code

```
import java.util.Scanner;

interface vehicle {

    void input();
    void display();
}

class bike implements vehicle {
    private String company, model;
    private int value;
    public void input() {
        Scanner in = new Scanner(System.in);

        System.out.print("Enter Company: ");
        company = in.nextLine();
        System.out.print("Enter Model: ");
        model = in.nextLine();
        System.out.print("Enter Value: ");
        value = in.nextInt();
    }
    public void display() {
        System.out.println("Company: " + company);
        System.out.println("Model: " + model);
        System.out.println("Value: " + value);
    }
}

class q3 {
    public static void main(String args[]) {

        bike b1 = new bike();
        b1.input();
        System.out.println("\nThe details of the vehicle are: ");
        b1.display();
    }
}
```

## 3.2. Output

```

1 2 6 7 8
> javac q3.java
> java q3
Enter Company: Harley Davidson
Enter Model: Fat Boy
Enter Value: 1825000

The details of the vehicle are:
Company: Harley Davidson
Model: Fat Boy
Value: 1825000
> java q3
Enter Company: Yamaha
Enter Model: YZF R15 V3
Enter Value: 148550

The details of the vehicle are:
Company: Yamaha
Model: YZF R15 V3
Value: 148550

```

Figure 3: Bike class

## 4. Inheritance

Write a JAVA program, in which create a sportsman class that inherits the class person to initialize the basic attributes of a sportsman object.

### 4.1. Source Code

```

import java.util.Scanner;

class person {
    public String name;
    protected String email;
    public int age;
    protected int height, weight;
    protected long phone;
}

class sportsman extends person {
    public String sport, team;
    public int experience;

    public void input() {
        Scanner in = new Scanner(System.in);
        System.out.print("Enter Name: ");
    }
}

```

```
        name = in.nextLine();
        System.out.print("Enter Age: ");
        age = in.nextInt();
        System.out.print("Enter Phone No: ");
        phone = in.nextLong();
        in.nextLine();
        System.out.print("Enter Email: ");
        email = in.nextLine();

        System.out.print("Enter Sport Played: ");
        sport = in.nextLine();
        System.out.print("Enter Team Name: ");
        team = in.nextLine();
        System.out.print("Enter Experience(Years): ");
        experience = in.nextInt();
    }

    public void display() {
        System.out.println("Name: " + name);
        System.out.println("Age: " + age);
        System.out.println("Phone No: " + phone);
        System.out.println("Email: " + email);
        System.out.println("Sport Played: " + sport);
        System.out.println("Team Name: " + team);
        System.out.println("Experience(Years): " + experience);
    }
}

class q4 {
    public static void main(String args[]) {
        sportsman sp = new sportsman();

        sp.input();
        System.out.println("\nThe details of the sportsman are:");
        sp.display();
    }
}
```

## 4.2. Output

```

1 2 6 7 8
> javac q4.java
> java q4
Enter Name: Ajay Devgun
Enter Age: 52
Enter Phone No: 8976543210
Enter Email: devgun_ajay@gmail.com
Enter Sport Played: Baseball
Enter Team Name: NewYork Yankees
Enter Experience(Years): 8

The details of the sportsman are:
Name: Ajay Devgun
Age: 52
Phone No: 8976543210
Email: devgun_ajay@gmail.com
Sport Played: Baseball
Team Name: NewYork Yankees
Experience(Years): 8

```

Figure 4: Sportsman class

## 5. Overloading

Create a JAVA program to perform method overloading to perform addition of float and integer numbers.

### 5.1. Source Code

```

import java.util.Scanner;

class adder {
    static int add(int x, int y)
    {
        return x + y;
    }
    static float add(float a, float b)
    {
        return a + b;
    }
}

class q5 {

    public static void main(String args[])
    {

```

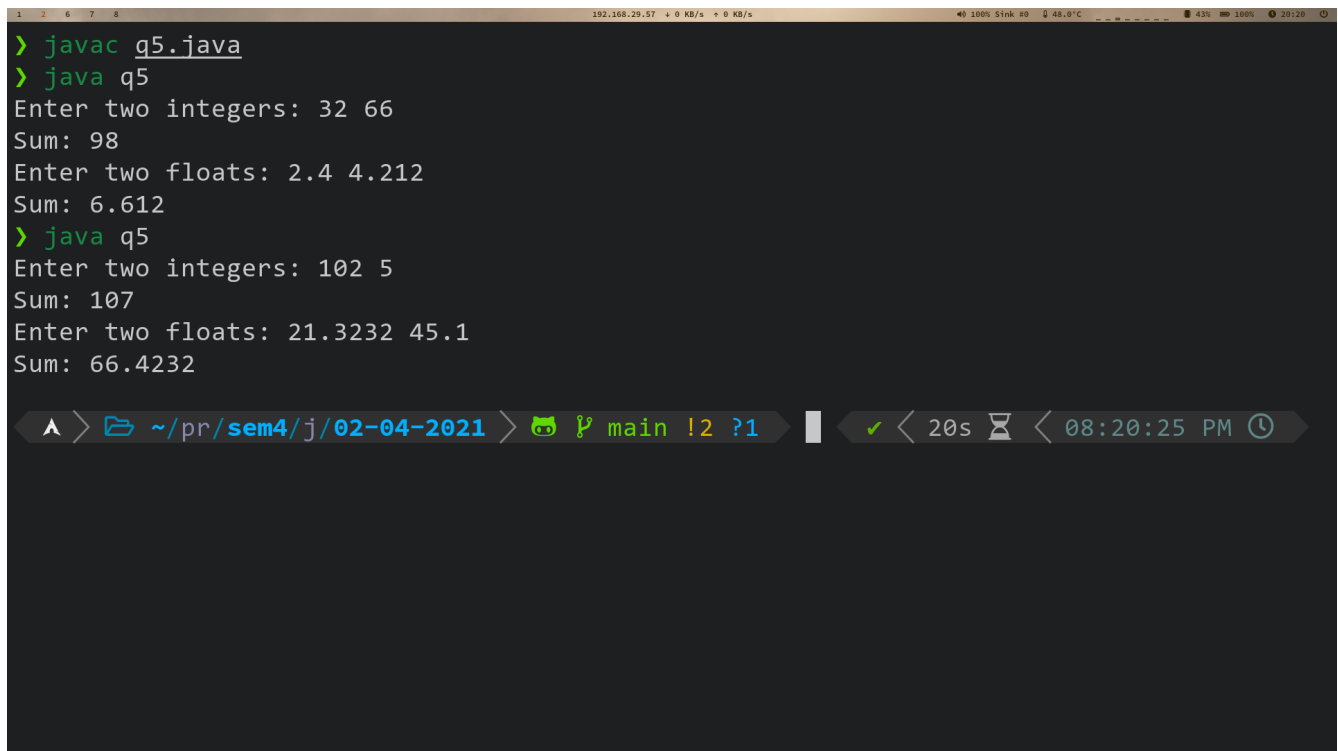


```
Scanner in = new Scanner(System.in);
int x, y;
float a, b;
System.out.print("Enter two integers: ");
x = in.nextInt();
y = in.nextInt();
System.out.println("Sum: " + adder.add(x, y));

System.out.print("Enter two floats: ");
a = in.nextFloat();
b = in.nextFloat();
System.out.println("Sum: " + adder.add(a, b));

}
```

## 5.2. Output



```
> javac q5.java
> java q5
Enter two integers: 32 66
Sum: 98
Enter two floats: 2.4 4.212
Sum: 6.612
> java q5
Enter two integers: 102 5
Sum: 107
Enter two floats: 21.3232 45.1
Sum: 66.4232
```

Figure 5: Additon of numbers