**Heaven’s Light is Our Guide**

# Rajshahi University of Engineering and Technology

## Department of Computer Science and Engineering

**Course No:** CSE.1204

**Course Title:** Sessional based on CSE.1203 (Object Oriented Programming)

**Lab Report No:** 09

**Lab Report On:** Interface in Java.

| **Submitted By** | **Submitted To** |
|---|---|
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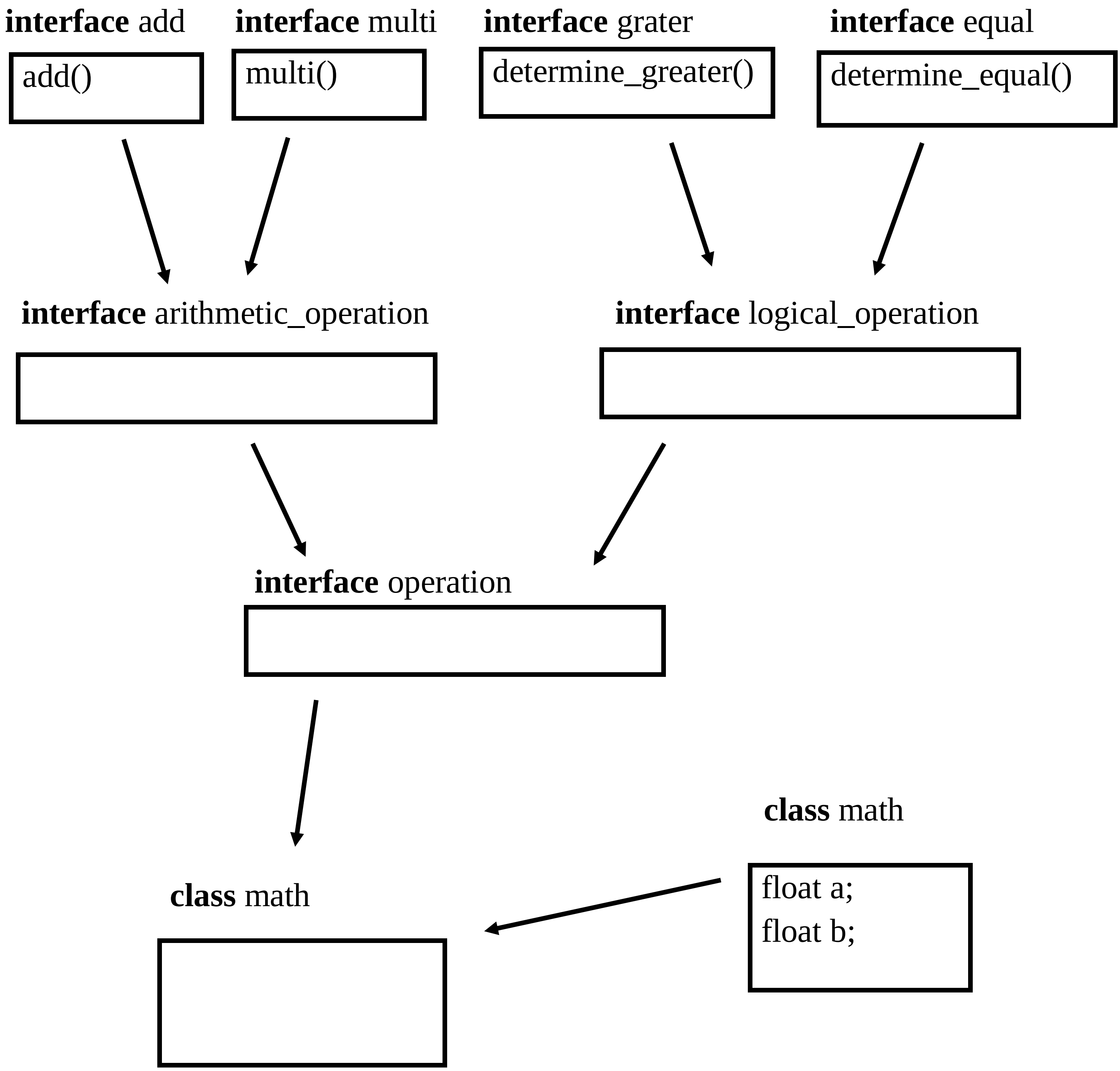
**Problem No:** 01

**Problem Statement:** Implementation of **Interface** in Java.



# Theory

**Interface** is like the blue print of a class. Like a class, an interface can have methods and variables, but the methods declared in an interface are by default abstract (only method signature, no body).

- Interfaces specify what a class must do and not how.
- If a class implements an interface and does not provide method bodies for all functions specified in the interface, then the class must be declared abstract.
- It is used to achieve multiple inheritance.
- It is used to achieve loose coupling.

Syntax of interface:

```
    interface <interface_name> {
            // declare constant fields
            //declare methods that are abstract by default
    }
```

To declare an interface,**interface** keyword is used. It is used to provide total abstraction. That means all the methods in an interface are declared with an empty body and are public and all fields are public, static and final by default. A class that implement interface must implement all the methods declared in the interface. To implement interface use **implements** keyword.

A class can implement one or more interfaces. Syntax:

```
class  <class_name>  implements <interface_X>,<interface_Y> {

            //Body of class with overriding the methods of interfaces
}
```

An interface can extends another interface or interfaces. Syntax:

```
interface  <interface_X>  extends <interface_Y> , <interface_Z>
{

                //Body of interface X
}
```

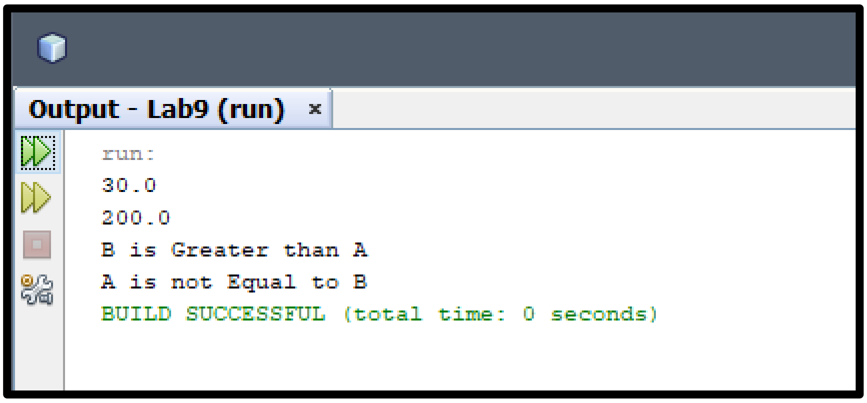
## Source Code

1. **Lab9.java :**

```
 /*
       Interface Relaeted Problem
 */
package lab9;

interface add {
   void add();
}

interface multi{
   void multi();
}

interface arithmetic_operation extends add,multi{


}

interface greater{
   void determine_greater();
}

interface equal{
   void determine_equal();
}
```

```
interface logical_operation extends greater,equal{

}

interface operation extends arithmetic_operation,logical_operation{

}

class number{
    private float a;
    private float b;
    public number(float a,float b){
        this.a=a;
        this.b=b;
    }
    public float get_a(){
        return a;
    }
    public float get_b(){
        return b;
    }
}

class math extends number  implements operation {

    public math(float a,float b){
        super(a,b);
    }
    @Override
    public void add(){
               System.out.println(super.get_a()+ super.get_b());
    }
    @Override
    public void multi(){
        System.out.println(super.get_a()* super.get_b());
    }
    @Override
    public void determine_greater() {
        if( super.get_a()>super.get_b()){
            System.out.println("A is Greater than B");
        }
        else if( super.get_a()<super.get_b()){
            System.out.println("B is Greater than A");
        }
    }
    @Override
    public void determine_equal() {
        if( super.get_a()==super.get_b()){
            System.out.println("A is Equal to B");
        }
        else
            System.out.println("A is not Equal to B");
    }
}

public class Lab9 {
    public static void main(String[] args) {
        math ob=new math(10,20);
        ob.add();
        ob.multi();
        ob.determine_greater();
        ob.determine_equal();
    }
}
```

## Output



```
run:
30.0
200.0
B is Greater than A
A is not Equal to B
BUILD SUCCESSFUL (total time: 0 seconds)
```

**Conclusion :** By our Course Teachers help and my knowledge about Java, I completed the program.

**# The End #**