1) Write Java code to define List . Insert 5 floating point numbers in List, and using an iterator, find the sum of the numbers in List.

```java
import java.util.Arrays;
import java.util.Iterator;
import java.util.List;

public class Ques1 {
   public static  void main(String[]args){
       List<Double> num = Arrays.asList(10.8,27.0,76.8,44.0,5.6);
       float sum  = 0;
       Iterator<Double> iterator = num.iterator();
       while (iterator.hasNext()){
           sum+=iterator.next();
       }
       System.out.println("Sum of numbers: "+sum);
   }
}
```

Output:

```
/home/himanshu/.jdks/openjdk-19.0.2/bin/java -javaagent:/snap/intellij-idea-community/409/lib/idea_rt.jar=38229:/sn
Sum of numbers: 164.20001

Process finished with exit code 0
```

2) Given the following class
Employee class{ Double Age; Double Salary; String Name}
Design the class in such a way that the default sorting should work on firstname and lastname.

Also, Write a program to sort Employee objects based on salary using Comparator.

```java
import java.util.ArrayList;
import java.util.Collections;
import java.util.Iterator;
import java.util.List;

public class Employee {
   private String firstname;
   private String lastname;
   private double salary;
```

```
    private double age;

    public Employee(String firstname, String lastname, double salary, double
age){
        this.firstname = firstname;
        this.lastname = lastname;
        this.salary = salary;
        this.age = age;
    }

    public String getFirstname() {
        return firstname;
    }

    public void setFirstname(String firstname) {
        this.firstname = firstname;
    }
    public String getLastname(){
        return lastname;
    }
    public void setLastname(String lastname){
        this.lastname = lastname;
    }
    public double getSalary(){
        return salary;
    }
    public void setSalary(double salary){
        this.salary = salary;
    }
    public double getAge(){
        return age;
    }
    public void setAge(double age){
        this.age = age;
    }

    @Override
    public String toString() {
        return
                "firstname='" + firstname + '\'' +
                        ", lastname='" + lastname + '\'' +
                        ", salary=" + salary +
                        ", age=" + age
                ;
    }
    public static void main(String[]args){
        List<Employee> emp = new ArrayList<>();
        Employee emp1 = new Employee("Ankit", "Rawat", 15000, 23);
        Employee emp2 = new Employee("Ankit", "Negi", 16000, 23);
```

```
        Employee emp3 = new Employee("Harshit", "Sharma", 19000, 23);
        Employee emp4 = new Employee("Prabhat", "Baluni", 10000, 23);
        Employee emp5 = new Employee("Kartik", "Chamoli", 52000, 23);
        emp.add(emp1);
        emp.add(emp2);
        emp.add(emp3);
        emp.add(emp4);
        emp.add(emp5);
        Iterator<Employee> iterable = emp.iterator();
        Collections.sort(emp, new ques2() {
            @Override
            public int compare(Employee e1, Employee e2) {
                return super.compare(e1, e2);
            }
        });
        for (Employee e:emp){
            System.out.println(e);
        }


    }
}
```

```
import java.util.Comparator;
abstract class ques2 implements Comparator<Employee> {
    public int compare(Employee e1, Employee e2){
        int fnameCompare = e1.getFirstname().compareTo(e2.getFirstname());
        int lnameCompare = e1.getLastname().compareTo(e2.getLastname());
        return (fnameCompare == 0) ? fnameCompare:lnameCompare;
    }
}
```

Output:

```
/home/himanshu/.jdks/openjdk-19.0.2/bin/java -javaagent:/snap/intellij-idea-community/409/lib/idea_rt.jar=35737:/sn
firstname='mukul', lastname='Baluni', salary=10000.0, age=23.0
firstname='mukesh', lastname='Cham', salary=52000.0, age=23.0
firstname='nitin', lastname='Sharma', salary=19000.0, age=23.0
firstname='harsh', lastname='mehta', salary=16000.0, age=23.0
firstname='himanshu', lastname='panchal', salary=15000.0, age=23.0

Process finished with exit code 0
```

3) Design a Data Structure SpecialStack that supports all the stack operations like push(), pop(), isEmpty(), isFull() and an additional operation getMin() which should return minimum element from the SpecialStack. (Expected complexity O(1))

```
import java.util.Stack;

class Ques3 extends Stack<Integer> {
   Stack<Integer> min = new Stack<>();
   void push(int x) {
       if (isEmpty() == true) {
           super.push(x);
           min.push(x);
       }
       else {
           super.push(x);
           int y = min.pop();
           min.push(y);
           if (x < y)
               min.push(x);
           else
               min.push(y);
       }
   }

   public Integer pop() {
       int x = super.pop();
       min.pop();
       return x;
   }

   int getMin() {
       int x = min.pop();
```

```
        min.push(x);
        return x;
    }

    public static void main(String[] args) {
        Ques3 s = new Ques3();
        s.push(9);
        s.push(22);
        s.push(12);
        System.out.println(s.getMin());
        s.push(5);
        s.push(0);
        System.out.println(s.getMin());
    }
}
```

Output:

```
/home/himanshu/.jdks/openjdk-19.0.2/bin/java -javaagent:/snap/intellij-idea-community/409/lib/idea_rt.jar=42551:/sn
9
0

Process finished with exit code 0
```

4) Create class Employee with attributes name,age,designation and use instances of these class as keys in a Map and their salary as value.

```
import java.util.HashMap;
import java.util.Map;

public class Ques4 {
    private String name;
    private int age;
    private String designation;
    private double salary;
    public Ques4 (String name,int age,String designation,double salary){
        this.name = name;
        this.age = age;
        this.designation = designation;
        this.salary = salary;
    }

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

```
    }

    public int getAge() {
        return age;
    }
    public String getDesignation(){
        return designation;
    }
    public double getSalary(){
        return salary;
    }

    @Override
    public String toString() {
        return "name='" + name + '\'' +
                ", age=" + age +
                ", designation='" + designation + '\'' +
                ", salary=" + salary
                ;
    }

    public static void main(String[]args){
        Ques4 emp1 = new Ques4("neha",23,"Trainee",15000);
        Ques4 emp2 = new Ques4("lakshay",23,"Software Developer", 52000);
        Ques4 emp3 = new Ques4("prdeep",23, "Associate Developer",19000);
        Ques4 emp4 = new Ques4("simple",21,"Game Developer", 40000);
        Ques4 emp5 = new Ques4("sandy",23,"Developer",12000);

        Map<Ques4,Double> sal = new HashMap<>();
        sal.put(emp1,emp1.getSalary());
        sal.put(emp2,emp2.getSalary());
        sal.put(emp3,emp3.getSalary());
        sal.put(emp4,emp4.getSalary());
        sal.put(emp5,emp5.getSalary());

        for (Map.Entry<Ques4,Double> entry : sal.entrySet()){
            System.out.println("Employee: "+entry.getKey().getName()+"\n Salary:
"+entry.getKey().getSalary());
        }
    }
}
```

Output:


/home/himanshu/.jdks/openjdk-19.0.2/bin/java -javaagent:/snap/intellij-idea-community/409/lib/idea_rt.jar=38257:/sn
Employee: lakshay
Salary: 52000.0
Employee: neha
Salary: 15000.0
Employee: prdeep
Salary: 19000.0
Employee: simple
Salary: 40000.0
Employee: sandy
Salary: 12000.0
Process finished with exit code 0