

## Problem 1

```
package Prob1;
import java.util.*;
public class Admin {
    public static HashMap<Key, Student> processStudents(List<Student>
students)
    {
        HashMap<Key, Student> result= new HashMap<Key, Student>();

        for (Student student : students) {
            Key key= new Key(student.getFirstName(),
student.getLastName());
            result.put(key, student);

        }
        return result;
    }
}
```

```
package Prob1;

public class Key {
    private String firstName;
    private String lastName;

    public String getFirstName() {
        return firstName;
    }

    public String getLastName() {
        return lastName;
    }

    public Key(String f, String l) {
        this.firstName = f;
        this.lastName = l;
    }

    @Override
    public boolean equals(Object obj) {
        if (this == obj) {
            return true;
        }
        if (obj == null) {
            return false;
        }
        if (getClass() != obj.getClass()) {
            return false;
        }
    }
}
```

```

    }
    Key other = (Key) obj;
    if (firstName == null) {
        if (other.firstName != null)
            return false;
    }
    if (lastName == null) {
        if (other.lastName != null)
            return false;
    }

    return firstName.equals(other.firstName) &&
lastName.equals(other.lastName);
}

@Override
public int hashCode() {
    final int prime = 31;
    int result = 1;
    result = prime * result + ((firstName == null) ? 0 :
firstName.hashCode());
    result = prime * result + ((lastName == null) ? 0 :
lastName.hashCode());
    return result;
}
}

package Prob1;

public class Student {
    private String firstName;
    private String lastName;
    private double gpa;
    private Standing standing;
    public Student(String firstName, String lastName, double gpa, Standing
standing) {
        this.firstName = firstName;
        this.lastName = lastName;
        this.gpa=gpa;
        this.standing = standing;
    }
    public Standing getStanding() {
        return standing;
    }
    public double getGpa() {
        return gpa;
    }
    public String getFirstName() {
        return firstName;
    }
    public String getLastName() {
        return lastName;
    }
}
@Override

```

```

    public String toString() {
        return "[" + firstName + " " + lastName + "]";
    }

    @Override
    public boolean equals(Object ob) {
        if(ob == null) return false;
        if(ob.getClass() != Student.class) return false;
        Student s = (Student)ob;
        return s.firstName.equals(firstName) &&
s.lastName.equals(lastName);
    }
}

17
18     HashMap<Key, Student> map = Admin.processStudents(list);
19     boolean[] expectedOutput = {true, false};
20     boolean[] results = new boolean[2];
21     Student s = new Student("Pierre", "Fromage", 2.8, Standing.FRESHMAN);
22     Key pierre = new Key("Pierre", "Fromage");
23     Key richard = new Key("Richard", "Fremling");
24
25     results[0] = (map.get(pierre).equals(s));
26     results[1] = map.containsKey(richard);
27     System.out.println((Arrays.equals(expectedOutput, results) ? "pass" : "fail"));
28
29
30
31
32 }
33
34 }
35

```

@ Javadoc Declaration Search Console

<terminated> Test [Java Application] C:\Program Files\Java\jre1.8.0\_60\bin\javaw.exe (16 jun. 2018 9:45:39)

pass

## Problem 2

```

package prob2;

//DO NOT MODIFY IN ANY WAY
public class Employee {
    private String name;
    private int salary;
    private String ssn;
    public Employee(String name, int salary, String ssn) {
        this.name = name;
        this.salary = salary;
        this.ssn=ssn;
    }

    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
    }
    public int getSalary() {

```

```

        return salary;
    }
    public void setSalary(int salary) {
        this.salary = salary;
    }
    public String getSsn() {
        return ssn;
    }

    public void setSsn(String ssn) {
        this.ssn = ssn;
    }

    @Override
    public String toString() { //DO NOT MODIFY
        return "(" + ssn + ": " + name + ", " + salary + ")" ;
    }

    @Override
    public boolean equals(Object ob) {
        if(ob == null) return false;
        if(!(ob instanceof Employee)) return false;
        Employee e = (Employee)ob;
        return e.ssn.equals(ssn);
    }
}

```

```
package prob2;
```

```
import java.util.ArrayList;
```

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

```
import java.util.List;
```

```
public class EmployeeAdmin {
```

```

    /**
     Returns a list of Employees whose social security number is on the input list
    socSecNums
     and whose salary is > 80000. The list must be ordered by social security number,
     from lowest to highest. To sort, you must use a Collections sorting method
     and you must define your own Comparator to be used to compare Employees by
    ssn.

```

```

        */

        public static List<Employee> prepareReport(HashMap<String, Employee> table,
List<String> socSecNums)
        {

            int SALARY=80000;

            List<Employee> result= new ArrayList<>();

            for (String ssn : socSecNums) {

                if (table.containsKey(ssn))
                {

                    Employee person= table.get(ssn);

                    if (person.getSalary()>SALARY )
                    {

                        result.add(person);

                    }

                }

            }

            return result;

        }

    }

}

package prob2;

import java.util.Comparator;

class EmployeeComparator implements Comparator<Employee>
{

```

```

@Override
public int compare(Employee o1, Employee o2) {

    return o1.getSsn().compareTo(o2.getSsn());

}
}

32     }
33 };
34
35 List<Employee> report = EmployeeAdmin.prepareReport(h, ssns);
36 Collections.sort(report, new EmployeeComparator());
37 System.out.println(report);
38
39 //Expected output:
40 //[(113145657: Rick, 92000), (212341557: Hank, 110000), (342892138: Ibu, 100000), (523421589: Tom, 88000)]
41
42 }
43
44 }
45

```

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@ Javadoc Declaration Search Console

<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0\_60\bin\javaw.exe (16 jun. 2018 9:46:55)  
 [(113145657: Rick, 92000), (212341557: Hank, 110000), (342892138: Ibu, 100000), (523421589: Tom, 88000)]

### Problem 3

```

package Prob3;

/** NOTE: You must override equals in this class */
public class Employee {
    private String name;
    private int salary;
    public Employee(String name, int salary) {
        this.name = name;
        this.salary = salary;
    }

    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
    }
    public int getSalary() {
        return salary;
    }
    public void setSalary(int salary) {
        this.salary = salary;
    }
    @Override
    public String toString() {
        return "(" + name + ", " + salary + ")";
    }
}

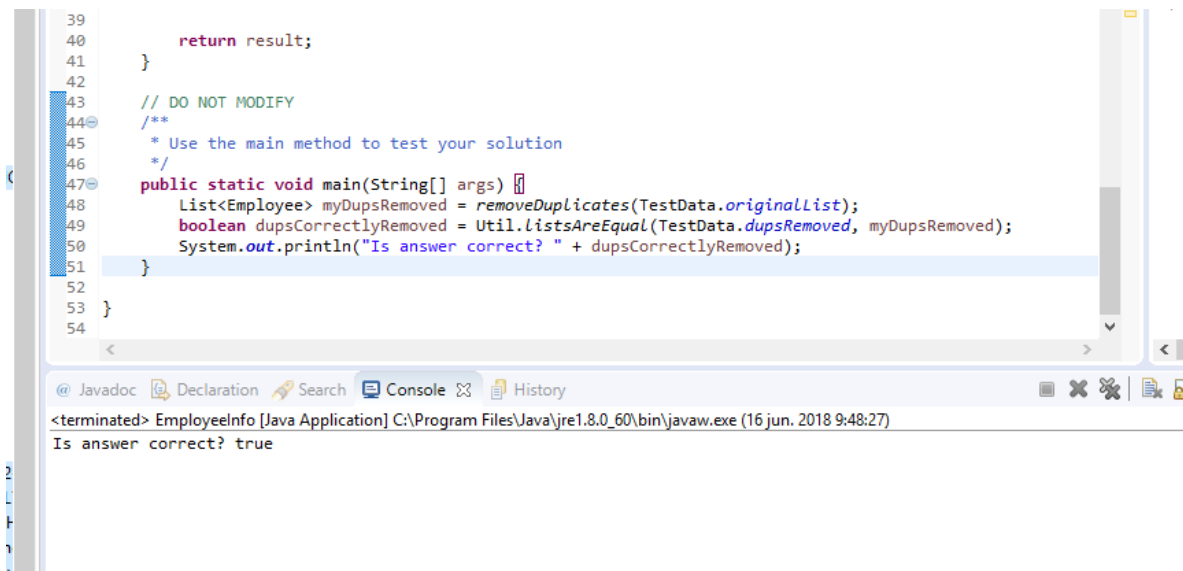
```

```
}
```

```
@Override
public boolean equals(Object obj) {
    if (this == obj)
        return true;
    if (obj == null)
        return false;
    if (getClass() != obj.getClass())
        return false;
    Employee other = (Employee) obj;
    if (name == null)
    {
        if (other.name != null)
        {
            return false;
        }
    }

    return this.salary==other.salary && this.name.equals(other.name);
}
```

```
}
```



The screenshot shows an IDE window with a Java file. The code includes a `main` method that tests the `removeDuplicates` method. The console output at the bottom shows the result of the test.

```
39
40     return result;
41 }
42
43 // DO NOT MODIFY
44 /**
45  * Use the main method to test your solution
46  */
47 public static void main(String[] args) {
48     List<Employee> myDupsRemoved = removeDuplicates(TestData.originalList);
49     boolean dupsCorrectlyRemoved = Util.listsAreEqual(TestData.dupsRemoved, myDupsRemoved);
50     System.out.println("Is answer correct? " + dupsCorrectlyRemoved);
51 }
52
53 }
54
```

Console Output:

```
<terminated> EmployeeInfo [Java Application] C:\Program Files\Java\jre1.8.0_60\bin\javaw.exe (16 jun. 2018 9:48:27)
Is answer correct? true
```