## Deep Dive on Streams

**Write the Programs for the Following Questions based on Streams API**

**Q1)** Display the Student Data

**Q2)** Display the Students who has to pay the Fee Balance.

**Q3)** Display the Students in Ascending Order by Name.

**Q4)** Display the Students who has to pay the Fee Balance in Descending Order by Name.

**Q5)** Find the Students whose feebal >=12000, Add 1000 to all of them
Sort them in Descending Order by FeeBal and Store the Result in List.

**Q6)** Display the Students who joined for DevOps Course.

**Q7)** Display the Students who joined for DevOps Course in ASC Order by Name

**Q8)** Display the Students who joined for DevOps Course in DESC Order by Name

**Q9)** How Many Students has to pay the fee bal from DevOps Course

**Q10)** Which Student has Paid Fee more (max)

**Q11)** Which Student has Paid Fee less (min)

**Q12)** Which Student Fee bal is more (max)

**Q13)** Display the Students Course-wise.

**Q14)** Display the Students who has to pay the Bal and Who Paid separately.

**Q15)** What is the Total Fee Bal to Receive?

**Q16)** What is the Total Fee Paid till now?

**Q17)** What is the Total Fee Bal to Receive Course-wise?

**Q18)** What is the Total Fee Paid till now by Course-wise?

### Student.java

```
package com.jlcindia.mydemos;

/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Student {

private int sid;
private String sname;
private long phone;
private String courseName; //Course course;
private double feePaid;  //Fee fee;
private double feeBal;

public Student() {}
public Student(int sid, String sname,  long phone, String courseName,  double feePaid,double
feeBal) {
super();
this.sid = sid;
this.sname = sname;
this.phone = phone;
this.courseName = courseName;
this.feePaid = feePaid;
this.feeBal = feeBal;
}
//Setters and Getters

@Override
public String toString() {
return " [" + sid + ", " + sname + ", " + phone + ", " + courseName
+ ", " + feePaid + ", " + feeBal + "]";
}
}
```

### 2) DataUtil.java

```
package com.jlcindia.mydemos;

import java.util.ArrayList;
import java.util.List;

/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class DataUtil {
public static List<Student> getStudentList(){

        List<Student> studentList = new ArrayList<>();
        Student stu1 = new Student(101,"sri",555,"DevOps",15000,0);
        Student stu2 = new Student(102,"vas",333,"MicroServices",15000,3000);
        Student stu3 = new Student(103,"sd",777,"MicroServices",19000,0);
        Student stu4 = new Student(104,"ds",222,"DevOps",3000,3000);
        Student stu5 = new Student(105,"hello",111,"DevOps",2000,15000);
        Student stu6 = new Student(106,"aaa",666,"DevOps",13000,2000);
        Student stu7 = new Student(107,"hai",444,"MicroServices",25000,5000);
        Student stu8 = new Student(108,"bbb",123,"Srping Boot",12500,0);
        Student stu9 = new Student(109,"ccc",321,"Srping Boot",9000,0);

        studentList.add(stu1);
        studentList.add(stu2);
        studentList.add(stu3);
        studentList.add(stu4);
        studentList.add(stu5);
        studentList.add(stu6);
        studentList.add(stu7);
        studentList.add(stu8);
        studentList.add(stu9);

        return studentList;

}
}
```

**Q1) Display the Student Data**

**Demo1.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo1 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

studentList.stream().forEach(System.out::println);
System.out.println("--------------------------");

List<Student> mylist1 = studentList.stream().collect(Collectors.toList());
mylist1.forEach(System.out::println);
System.out.println("--------------------------");

}

}
```

**Q2) Display the Students who has to pay the Fee Balance.**

**Demo2.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;

/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo2 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

studentList.stream()
.filter(mystu -> mystu.getFeeBal()>0)
.forEach(System.out::println);

System.out.println("--------------------------");

List<Student> mylist1 =
studentList.stream()
.filter(mystu -> mystu.getFeeBal()>0)
.collect(Collectors.toList());

mylist1.forEach(System.out::println);

System.out.println("--------------------------");

}

}
```

### Q3) Display the Students in Ascending Order by Name.

**Demo3.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;

/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo3 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

studentList.stream()
.sorted((stu1,stu2)-> stu1.getSname().compareTo(stu2.getSname()))
.forEach(System.out::println);

System.out.println("--------------------------");

List<Student> mylist = studentList.stream()
.sorted((stu1,stu2)-> stu2.getSname().compareTo(stu1.getSname()))
.collect(Collectors.toList());

mylist.forEach(System.out::println);

}

}
```

**Q4) Display the Students who has to pay the Fee Balance in Descending Order by Name.**

**Demo4.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;

/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo4 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

studentList.stream()
.filter(mystu -> mystu.getFeeBal()>0)
.sorted((stu1,stu2)-> stu2.getSname().compareTo(stu1.getSname()))
.forEach(System.out::println);


List<Student> mylist = studentList.stream()
.filter(mystu -> mystu.getFeeBal()>0)
.sorted((stu1,stu2)-> stu2.getSname().compareTo(stu1.getSname()))
.collect(Collectors.toList());

mylist.forEach(System.out::println);
}

}
```

**Q5) Find the Students whose feebal >=12000,**
**Add 1000 to all of them**
**Sort them in Descending Order by FeeBal**
**Store in ResultList.**

### Demo5.java

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;

/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo5 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

System.out.println("--------------------------");
List<Student> mylist =
studentList.stream()
.filter(mystu -> mystu.getFeeBal()>=2000)
.map(mystu -> {
mystu.setFeeBal(mystu.getFeeBal()+1000);
return mystu;
})
.sorted((stu1,stu2)-> (int) (stu2.getFeeBal() - stu1.getFeeBal()))
.collect(Collectors.toList());

mylist.forEach(System.out::println);

}

}
```

**Q6) Display the Students who joined for DevOps Course.**

**Demo6.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo6 {

public static void main(String[] args) {


List<Student> studentList = DataUtil.getStudentList();

System.out.println("--------------------------");
List<Student> mylist =
studentList.stream()
.filter(mystu -> mystu.getCourseName().equals("DevOps"))
.collect(Collectors.toList());

mylist.forEach(System.out::println);


}

}
```

## Q7) Display the Students who joined for DevOps Course in ASC Order by Name

**Demo7.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo7 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

List<Student> mylist =
studentList.stream()
.filter(mystu -> mystu.getCourseName().equals("DevOps"))
.sorted((stu1, stu2) -> stu1.getSname().compareTo(stu2.getSname()))
.collect(Collectors.toList());

mylist.forEach(System.out::println);

}

}
```

### Q8) Display the Students who joined for DevOps Course in DESC Order by Name

**Demo8.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo8 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

List<Student> mylist =
studentList.stream()
.filter(mystu -> mystu.getCourseName().equals("DevOps"))
.sorted((stu1, stu2) -> stu2.getSname().compareTo(stu1.getSname()))
.collect(Collectors.toList());

mylist.forEach(System.out::println);

}

}
```

### Q9) How Many Students has to pay the fee bal from DevOps Course

**Demo9.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo9 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

System.out.println("--------------------------");
long count1 =
studentList.stream()
.filter(mystu -> mystu.getCourseName().equals("DevOps"))
.filter(mystu -> mystu.getFeeBal()>0)
.collect(Collectors.counting());

System.out.println(count1);


}

}
```

## Q10) Which Student has Paid Fee more (max)

### Demo10.java

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Optional;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo10 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();


Optional<Student> studentOpts1 =
studentList.stream()
.max((stu1,stu2)-> (int) (stu1.getFeePaid() - stu2.getFeePaid()));

studentOpts1.ifPresent(System.out::println);

System.out.println("--------------------------");
Optional<Student> stuOpts1 =
studentList.stream()
.collect(Collectors.maxBy((stu1, stu2) ->(int) (stu1.getFeePaid() - stu2.getFeePaid())));

stuOpts1.ifPresent(System.out::println);


}

}
```

**Q11) Which Student has Paid Fee less (min)**

**Demo11.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Optional;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo11{

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();


Optional<Student> studentOpts2 =
studentList.stream()
.min((stu1,stu2)-> (int) (stu1.getFeePaid() - stu2.getFeePaid()));

studentOpts2.ifPresent(System.out::println);

System.out.println("--------------------------");
Optional<Student> stuOpts2 =
studentList.stream()
.collect(Collectors.minBy((stu1, stu2) ->(int) (stu1.getFeePaid() - stu2.getFeePaid())));

stuOpts2.ifPresent(System.out::println);

}

}
```

## Q12) Which Student Fee bal is more (max)

**Demo12.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Optional;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo12 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();


Optional<Student> studentOpts3 =
studentList.stream()
.max((stu1,stu2)-> (int) (stu1.getFeeBal() - stu2.getFeeBal()));

studentOpts3.ifPresent(System.out::println);

System.out.println("--------------------------");

Optional<Student> stuOpts1 =
studentList.stream()
.collect(Collectors.maxBy((stu1, stu2) ->(int) (stu1.getFeeBal() - stu2.getFeeBal())));

stuOpts1.ifPresent(System.out::println);
}

}
```

## Q13) Display the Students Course-wise.

### Demo13.java

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Map;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo13 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

Map<String,List<Student>> stuMap =
studentList.stream()
.collect(Collectors.groupingBy(Student::getCourseName));

for(String cname  : stuMap.keySet()) {
List<Student> mylist = stuMap.get(cname);
System.out.println("Student Joined for   : "+ cname );
mylist.forEach(System.out::println);
System.out.println("-------------------");
}

}

}
```

**Q14) Display the Students who has to pay the Bal and Who Paid separately.**

**Demo14.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Map;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo14 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();


Map<Boolean, List<Student>> stuMap =
studentList.stream()
.collect(Collectors.partitioningBy(stu -> stu.getFeeBal() == 0));

for (boolean flag : stuMap.keySet()) {
List<Student> mylist = stuMap.get(flag);
if (flag) {
System.out.println("Students with NO Bal: ");
} else {
System.out.println("Students with Bal to Pay: ");
}
mylist.forEach(System.out::println);
}
}

}
```

**Q15) What is the Total Fee Bal to Receive?**

**Demo15.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo15 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

double totalFeeBal = studentList.stream()
.collect(Collectors.summingDouble(Student::getFeeBal));

System.out.println("Total Fee bal : "+totalFeeBal);


}
}
```

**Q16) What is the Total Fee Paid till now?**

**Demo16.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo16 {

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

double totalFeePaid = studentList.stream()
.collect(Collectors.summingDouble(Student::getFeePaid));

System.out.println("Total Fee Paid : "+totalFeePaid);
}
}
```

**Q17) What is the Total Fee Bal to Receive Course-wise?**

**Demo17.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Map;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo17{

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

Map<String, Double> feeBalMap
= studentList.stream()
.collect(
Collectors.groupingBy(Student::getCourseName,
Collectors.summingDouble(Student::getFeeBal)
));

for(String courseName:feeBalMap.keySet() ) {
System.out.println(courseName+"  : "+feeBalMap.get(courseName));
}


}
}
```

**Q18) What is the Total Fee Paid till now by Course-wise?**

**Demo18.java**

```
package com.jlcindia.mydemos;

import java.util.List;
import java.util.Map;
import java.util.stream.Collectors;
/*
* @Author : Srinivas Dande
* @Company: Java Learning Center
* */

public class Demo18{

public static void main(String[] args) {

List<Student> studentList = DataUtil.getStudentList();

Map<String, Double> feePaidMap
= studentList.stream()
.collect(Collectors.groupingBy(Student::getCourseName,
Collectors.summingDouble(Student::getFeePaid)));

for(String courseName:feePaidMap.keySet() ) {
System.out.println(courseName+"  : "+feePaidMap.get(courseName));
}

}
}
```