Assignment 3

Part 1: Write a menu-driven Java Program to study the concepts of classes, and array of objects/arraylist, instance members, and constructors in Java. Assignment description: Create a Student class describing attributes of a student like prn, name, DoB, marks etc. Create an array of objects of Student class and perform operations like Add students, Display, Search, Update/Edit and Delete.

Github Link: https://github.com/manan3044/Assignment_3

Code

1) Main.java

```java
package Assignment3;

import java.util.Scanner;

public class Main {

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in) ;
        studentFunctions studfuncs = new studentFunctions();
        boolean run= true;
        int choice;

        do{
            System.out.print("\n\nWhat operation do you want to
perform:\n1)Add Student\n2)Display Student
Details\n3)Search\n4)Edit Student Detail\n5)Delete
Student\n6)Exit\n=");
            choice = sc.nextInt();
            switch(choice)
            {
                case 1:
                    studfuncs.addStudent();
                    break;

                case 2:
                    studfuncs.printStudentDetails();
                    break;

                case 3:
                    studfuncs.searchStudent();
                    break;

                case 4:
                    studfuncs.editStudent();
```

```java
                    break;

                case 5:
                    studfuncs.deleteStudent();
                    break;

                case 6:
                    System.out.println("Thank you for using");
                    run = false;
                    break;
            }
        }while(run);
    }
}
```

2)Student.java

```java
package Assignment3;

public class Student {
    private int PRN;
    private String name;
    private String dob;
    private float marks;

    public Student(int PRN, String name, String dob, float marks)
{
        this.PRN = PRN;
        this.name = name;
        this.dob = dob;
        this.marks = marks;
    }

    public int getPRN() {
        return PRN;
    }

    public String getName() {
        return name;
    }

    public String getDob() {
        return dob;
    }
    public float getMarks() {
        return marks;
    }

    public void setPRN(int PRN) {
        this.PRN = PRN;
    }

    public void setName(String name) {
```

```java
        this.name = name;
    }

    public void setDob(String dob) {
        this.dob = dob;
    }
    public void setMarks(float marks) {
        this.dob = dob;
    }
}
```

3)studentFunctions.java

```java
package Assignment3;
import java.util.ArrayList;
import java.util.Scanner;

public class studentFunctions {
    Scanner sc = new Scanner(System.in);
    ArrayList<Student> studentList = new ArrayList<>();

    public void addStudent()
    {
        System.out.print("\nHow many students do you want to
enter: ");
        int totalEnter = sc.nextInt();

        for(int i=0; i<totalEnter; i++)
        {
            System.out.print("PRN: ");
            int prn = sc.nextInt();

            System.out.print("Name: ");
            String name = sc.next();

            System.out.print("Total Marks: ");
            float marks = sc.nextFloat();

            System.out.print("DOB: ");
            String dob = sc.next();

            studentList.add(new Student(prn, name, dob, marks));
        }
    }

    public void printStudentDetails()
    {
        for (Student student : studentList) {
            int prn = student.getPRN();
            String name = student.getName();
            String dob = student.getDob();
            float marks = student.getMarks();
```

```java
            System.out.print("\n\nPRN: " + prn + "\nName: " +
name + "\nDOB: " + dob + "\nMarks: " + marks);
        }
    }

    public void searchStudent()
    {
        System.out.print("\nBy what parameter do you want to
search: \n1)PRN\n2)Name\n3)Index\n=");
        int choice = sc.nextInt();
        switch (choice)
        {
            case 1:
                System.out.print("Enter the PRN you want to
search: ");
                int prn = sc.nextInt();

                for (Student student : studentList)
                {
                    if (student.getPRN() == prn)
                    {
                        String name = student.getName();
                        String dob = student.getDob();
                        float marks = student.getMarks();
                        System.out.println("\n\nPRN: " + prn +
"\nName: " + name + "\nDOB: " + dob + "\nMarks: " + marks);
                    }
                    else
                    {
                        System.out.println("Student not found!");
                    }
                }
                break;

            case 2:
                System.out.print("Enter the name you want to
search: ");
                String name = sc.next();

                for (Student student : studentList)
                {
                    if (name.equals(student.getName()))
                    {
                        int prn1 = student.getPRN();
                        String dob = student.getDob();
                        float marks = student.getMarks();
                        System.out.println("\n\nPRN: " + prn1 +
"\nName: " + name + "\nDOB: " + dob + "\nMarks: " + marks);
                    }
                    else
                    {
                        System.out.println("Student not found!");
                    }
```

```java
                }
                break;

            case 3:
                System.out.print("Enter the index you want to
search: ");
                int index = sc.nextInt();

                Student student = studentList.get(index);

                int prn_index = student.getPRN();
                String name_index = student.getName();
                String dob_index = student.getDob();
                float marks_index = student.getMarks();
                System.out.println("\n\nPRN: " + prn_index +
"\nName: " + name_index + "\nDOB: " + dob_index + "\nMarks: " +
marks_index);
                break;
        }
        }

    public void editStudent()
        {
            System.out.print("Enter the PRN of student you want
to edit: ");
            int prn = sc.nextInt();

            for (Student student : studentList)
            {
                if (student.getPRN() == prn)
                {
                    System.out.println("Student Found! \nEnter
the new details below:");
                    System.out.print("PRN: ");
                    int prn_edit = sc.nextInt();

                    System.out.print("Name: ");
                    String name_edit = sc.next();

                    System.out.print("Total Marks: ");
                    float marks_edit = sc.nextFloat();

                    System.out.print("DOB: ");
                    String dob_edit = sc.next();

                    studentList.set(studentList.indexOf(student),
new Student(prn_edit, name_edit, dob_edit, marks_edit));

                }
                else
                {
                    System.out.println("Student not found!");
                }
```

```java
                }
            }

    public void deleteStudent()
        {
            System.out.print("Enter the PRN of student you want
to delete: ");
            int prn = sc.nextInt();
//          Student s_delete = new Student(0,"X","Y",0);

            for (Student student : studentList)
            {
                if (student.getPRN() == prn)
                {
                    System.out.println("Student Found!\nStudnet
Details Deleted");

                    studentList.remove(student);
                    break;
                }
                else
                {
                    System.out.println("Student not found!");
                    return;
                }
            }
        }
}
```

Output

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=1


How many students do you want to enter: 3

PRN: 62
Name: Manan
Total Marks: 90
DOB: 30-4-2004


PRN: 55
Name: PQR
Total Marks: 56
DOB: 29-5-2001


PRN: 69
Name: MNO
Total Marks: 77
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=2


PRN: 62
Name: Manan
DOB: 30-4-2004
Marks: 90.0

PRN: 55
Name: PQR
DOB: 29-5-2001
Marks: 56.0

PRN: 69
Name: MNO
DOB: 2-1-2003
Marks: 77.0
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=3


By what parameter do you want to search:
1)PRN
2)Name
3)Index
=1
Enter the PRN you want to search: 62



PRN: 62
Name: Manan
DOB: 30-4-2004
Marks: 90.0
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=3


By what parameter do you want to search:
1)PRN
2)Name
3)Index
=2
Enter the name you want to search: PQR


PRN: 55
Name: PQR
DOB: 29-5-2001
Marks: 56.0
Student not found!
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=3


By what parameter do you want to search:
1)PRN
2)Name
3)Index
=3
Enter the index you want to search: 2



PRN: 69
Name: MNO
DOB: 2-1-2003
Marks: 77.0
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=4
Enter the PRN of student you want to edit: 69
Student not found!
Student not found!
Student Found!
Enter the new details below:
PRN: 69
Name: XYZ
Total Marks: 89
DOB: 2-1-2003
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=2


PRN: 62
Name: Manan
DOB: 30-4-2004
Marks: 90.0

PRN: 55
Name: PQR
DOB: 29-5-2001
Marks: 56.0

PRN: 69
Name: XYZ
DOB: 2-1-2003
Marks: 89.0
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=5
Enter the PRN of student you want to delete: 62
Student Found!
Studnet Details Deleted
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=2


PRN: 55
Name: PQR
DOB: 29-5-2001
Marks: 56.0

PRN: 69
Name: XYZ
DOB: 2-1-2003
Marks: 89.0
```

```
What operation do you want to perform:
1)Add Student
2)Display Student Details
3)Search
4)Edit Student Detail
5)Delete Student
6)Exit
=6
Thank you for using
```