PIJ Lab Assignment 3

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Batch: AIML A1

Write a menu-driven Java Program to study the concepts of classes, array of objects/arraylist, instance members, 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 (by prn, by name, by position), Update/Edit and Delete.

CODE:

```
import java.util.*;


public class StudentManager {
   public static void main(String[] args)
   {
      student_functions student_functions_object = new
student_functions();


      // menu for add, display, search, update, delete
      while(true){
         System.out.println("Select the operation to modify database:
");
         System.out.println("0. Exit");
         System.out.println("1. Add student details");
         System.out.println("2. Display all");
```

```
System.out.println("3. Search student");
System.out.println("4. Update Details");
System.out.println("5. Delete record");

Scanner sc = new Scanner(System.in);
int choice = sc.nextInt();

switch(choice){
   case 0:
      System.out.println("Exiting...");
      break;
   case 1:
      student_functions_object.add_student();
      break;
   case 2:
      student_functions_object.display();
      break;
   case 3:
      student_functions_object.search();
      break;
   case 4:
      student_functions_object.update();
      break;
   case 5:
```

```
                student_functions_object.delete();
                break;
            default:
                System.out.println("Invalid choice");
        }
        if(choice==0){
            break;
        }

    }
  }
}

class student {
    private int prn;
    private String name;
    private String dob;
    private int marks;

    public student(int prn, String name, String dob, int marks) {
        this.prn = prn;
        this.name = name;
        this.dob = dob;
        this.marks = marks;
```

```
}

public int getPrn() {
   return prn;
}

public void setPrn(int prn) {
   this.prn = prn;
}

public String getName() {
   return name;
}

public void setName(String name) {
   this.name = name;
}

public String getDob() {
   return dob;
}

public void setDob(String dob) {
   this.dob = dob;
```

```
    }

    public int getMarks() {
        return marks;
    }

    public void setMarks(int marks) {
        this.marks = marks;
    }
}

class student_functions {
    ArrayList<student> student_list = new ArrayList<student>();


    public void print_student(int i)
    {
        System.out.print("Name: " + student_list.get(i).getName()+" | ");
        System.out.print("PRN: " + student_list.get(i).getPrn()+" | ");
        System.out.print("DOB: "+ student_list.get(i).getDob()+" | ");
        System.out.print("Marks: " +student_list.get(i).getMarks()+"  |
\n\n");
    }
```

```
    public void add_student() {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the number of students to be added:
");
        int n = sc.nextInt();

        for (int i = 0; i < n; i++) {
            System.out.println("Enter the details of the student in the
following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
            String details = sc.next();

            String[] details_array = details.split(",");
            int prn = Integer.parseInt(details_array[0]);

            String name = details_array[1];

            String dob_string = details_array[2];

            int marks = Integer.parseInt(details_array[3]);

            student new_student = new student(prn, name, dob_string,
marks);
            student_list.add(new_student);
        }
    }
```

```
public void display() {
    for (int i = 0; i < student_list.size(); i++) {
        print_student(i);
    }
}

public void search(){

    System.out.println("Select the search criteria: ");
    System.out.println("1. PRN");
    System.out.println("2. Name");
    System.out.println("3. Position");

    Scanner sc = new Scanner(System.in);
    int choice = sc.nextInt();

    switch(choice){
        case 1:
            // //Using contains method
            // System.out.println("Enter the PRN to be searched: ");
            // int temp_prn = sc.nextInt();
            // if(student_list.contains(temp_prn)){
            // int found = student_list.indexOf(temp_prn);
```

```
    // print_student(found);
    // }
    // else{
    //     System.out.println("PRN not found");
    // }

    //OR

    System.out.println("Enter the PRN to be searched: ");
    int prn = sc.nextInt();
    for (int i = 0; i < student_list.size(); i++) {
        if (student_list.get(i).getPrn() == prn) {
            print_student(i);
        }
    }

    break;
case 2:
    System.out.println("Enter the Name to be searched: ");
    String name = sc.next();
    for (int i = 0; i < student_list.size(); i++) {
        if (student_list.get(i).getName() == name) {
            print_student(i);
        }
```

```
            }
            break;
        case 3: //position
            System.out.println("Enter the Position to be searched: ");
            int position = sc.nextInt();
            for (int i = 0; i < student_list.size(); i++) {
                if (i == position) {
                    print_student(i);
                }
            }
            break;
        default:
            System.out.println("Invalid choice");
    }


}


public void update(){
    System.out.println("Enter the PRN of the student to be updated:
");
    Scanner sc = new Scanner(System.in);
    int prn = sc.nextInt();


    for (int i = 0; i < student_list.size(); i++) {
```

```
            if (student_list.get(i).getPrn() == prn) {
                System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
                String details = sc.next();

                String[] details_array = details.split(",");
                int prn_new = Integer.parseInt(details_array[0]);

                String name_new = details_array[1];

                String dob_string_new = details_array[2];

                int marks_new = Integer.parseInt(details_array[3]);

                student new_student = new student(prn_new, name_new, dob_string_new, marks_new);
                student_list.set(i, new_student);
            }
        }
    }

    public void delete(){
        System.out.println("Enter the PRN of the student to be deleted: ");
        Scanner sc = new Scanner(System.in);
```

```
        int prn = sc.nextInt();


        for (int i = 0; i < student_list.size(); i++) {
            if (student_list.get(i).getPrn() == prn) {
                System.out.println("Student named:"+
student_list.get(i).getName() + " deleted successfully");
                student_list.remove(i);
            }
        }
    }


}
```

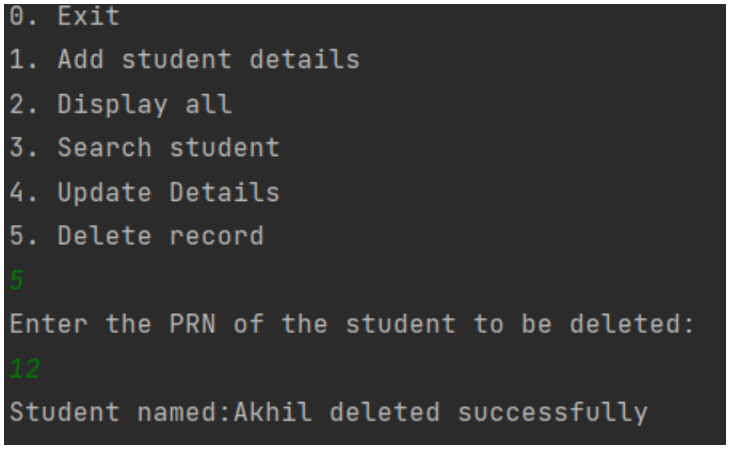
OUTPUT:

```
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
1S
4
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
12,Akhil,22/02/2002,90
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
13,Arjun,23/08/2001,60
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
14,Jatin,24/08/2003,85
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
15,Kartik,25/06/2001,86
```

```
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
2
Name: Akhil | PRN: 12 | DOB: 22/02/2002 | Marks: 90  |

Name: Arjun | PRN: 13 | DOB: 23/08/2001 | Marks: 60  |

Name: Jatin | PRN: 14 | DOB: 24/08/2003 | Marks: 85  |

Name: Kartik | PRN: 15 | DOB: 25/06/2001 | Marks: 86  |
```

```
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
3
Select the search criteria:
1. PRN
2. Name
3. Position
1
Enter the PRN to be searched:
13
Name: Arjun | PRN: 13 | DOB: 23/08/2001 | Marks: 60  |
```

```
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record

4
Enter the PRN of the student to be updated:
14
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
16,Ram,12/12/2003,63
```



GITHUB LINK: https://github.com/akhilrastogi10/java-sem-4.git