PROGRAMMING IN JAVA LAB-3

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Batch-AIML A1

Problem: Write a menu-driven Java Program to study the concepts ofclasses, arrayof objects, instance members, constructors in java.Assignment description: Create a Student class describing attributes of astudent like prn, name, DoB, marks etc. Create an array of objects ofStudent class and perform operations like: Add students, Display, Search(by prn, by name, by position), Update/Edit and Delete.

Solution: Using private(accessing using getter and setter) variables in a student class and using a student_functions class to perform operations on the student class such as add, display, search, update and delete. 2 classes are used to implement the solution.

//

```
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();
```

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            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; // date of birth in dd/mm/yyy format
private int marks; //marks is

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]);
```

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        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();
```

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    // 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);
            }
        }
    }

}
```

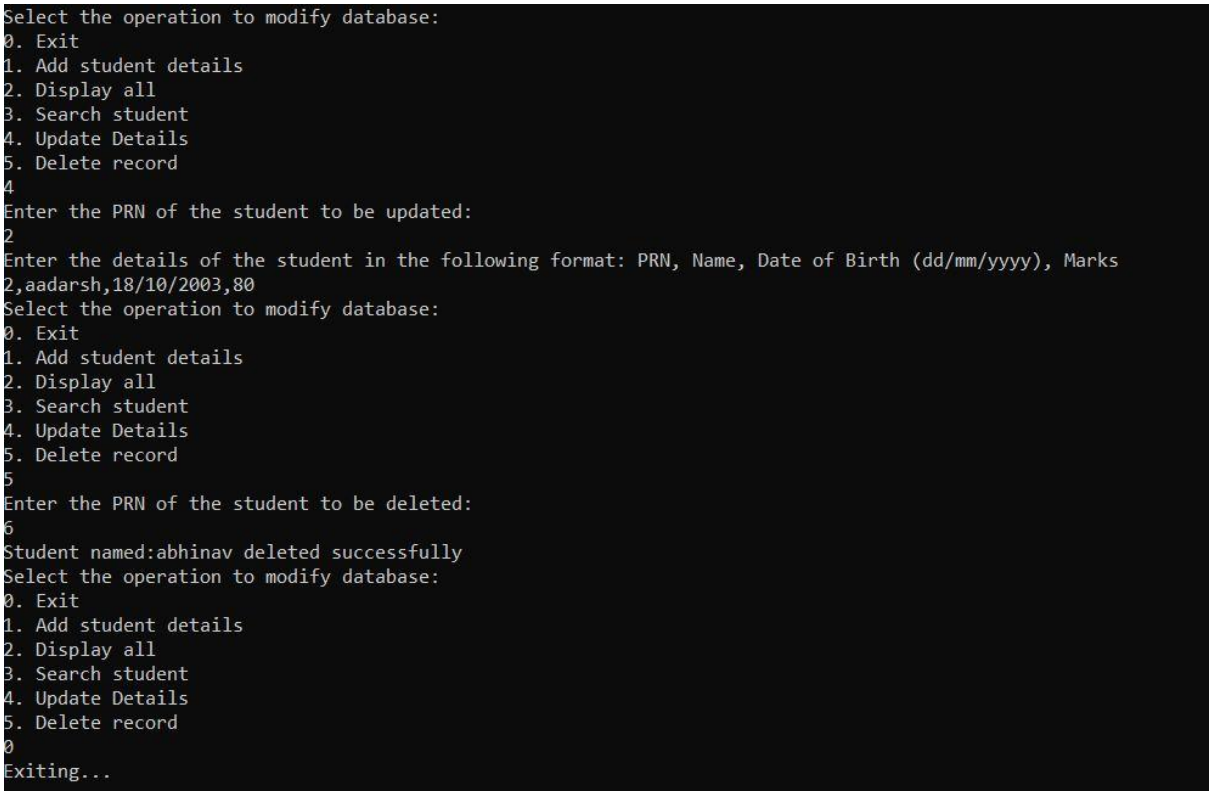
OUTPUT

```
C:\Users\nayye\OneDrive\Desktop\JAVA>javac StudentManager.java

C:\Users\nayye\OneDrive\Desktop\JAVA>java StudentManager
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
1
Enter the number of students to be added:
2
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
2,aadarsh,18/10/2003,75
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
6,abhinav,28/07/2002,76
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
2
Name: aadarsh | PRN: 2 | DOB: 18/10/2003 | Marks: 75  |

Name: abhinav | PRN: 6 | DOB: 28/07/2002 | Marks: 76  |
```

```
Select the operation to modify database:
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:
2
Name: aadarsh | PRN: 2 | DOB: 18/10/2003 | Marks: 75  |
```



GITHUB LINK: https://github.com/aadarsh1810/JAVA-SEM-4/tree/main/Assignment-3