

Assignment 3

Name: TANVI JATKAR

Division: AIML-A2

PRN: 21070126043

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 PIJ_Assignment3 {
    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:
        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:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3\lib\idea_rt.jar=59507:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3\bin" -Dfile.encoding=UTF-8
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
Enter the number of students to be added:
4
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
PRN: abc DOB: 20/02/2002 Marks: 93
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
PRN: ghi DOB: 06/04/2003 Marks: 79
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
Name: abc | PRN: 4 | DOB: 20/02/2002 | Marks: 93 |
Name: ghi | PRN: 5 | DOB: 06/04/2003 | Marks: 79 |
Select the operation to modify database:
0. Exit
1. Add student details

```

```
PIJ_Assignment3 x
2. Display all
3. Search student
4. Update Details
5. Delete record
?
Enter the PRN of the student to be updated:
999
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
999 abc 06/04/2003 86
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
?
Name: abc | PRN: 4 | DOB: 20/02/2002 | Marks: 93 |

Name: ghi | PRN: 5 | DOB: 06/04/2003 | Marks: 86 |

Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
?
Exiting.....
```