

JAVA ASSIGNMENT 3

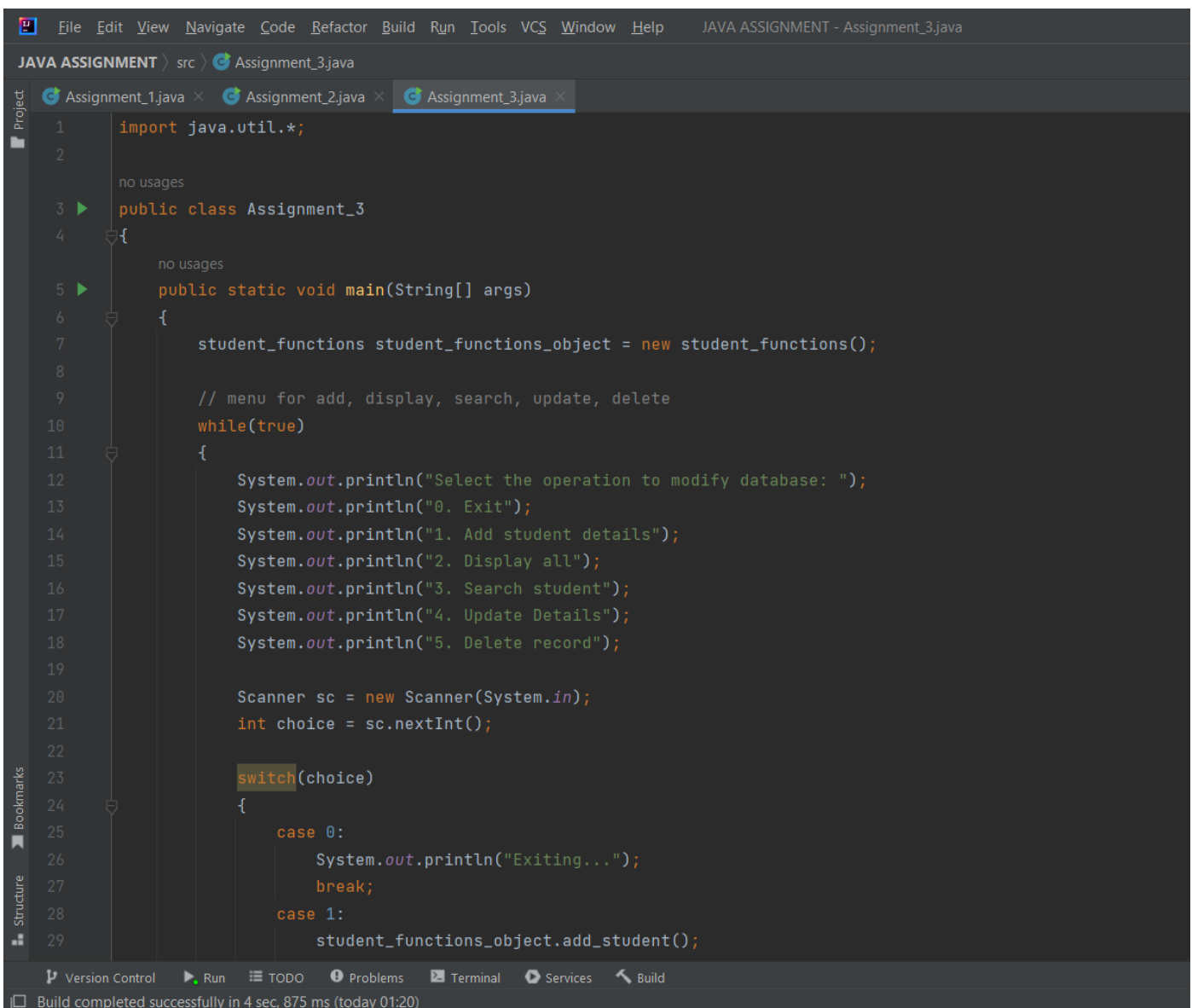
NAME : ANANYA KUMAR

PRN : 21070126012

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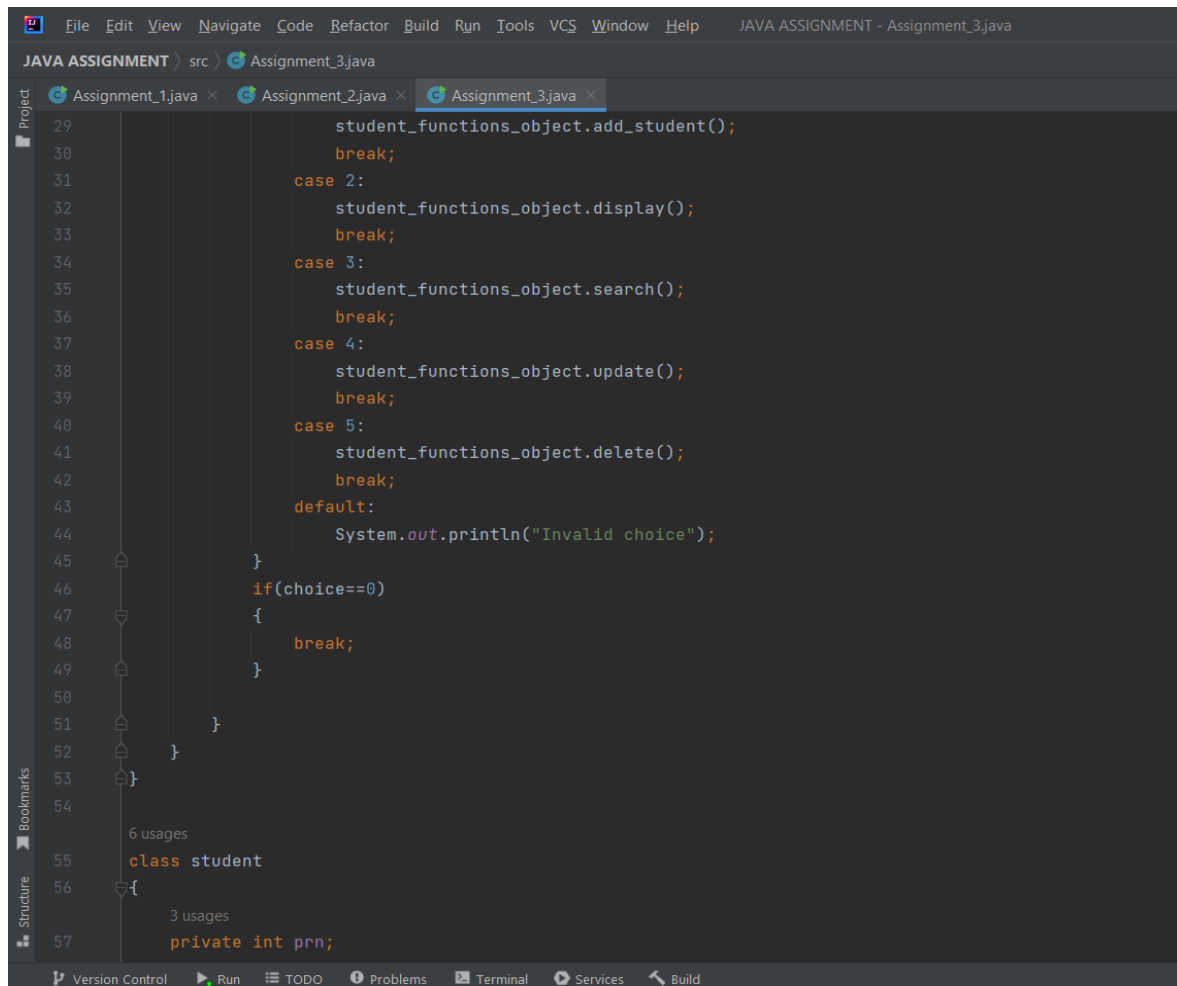
Write a menu-driven Java Program to study the concepts of classes, array of objects/arraylist, instance members, constructors in java.

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.

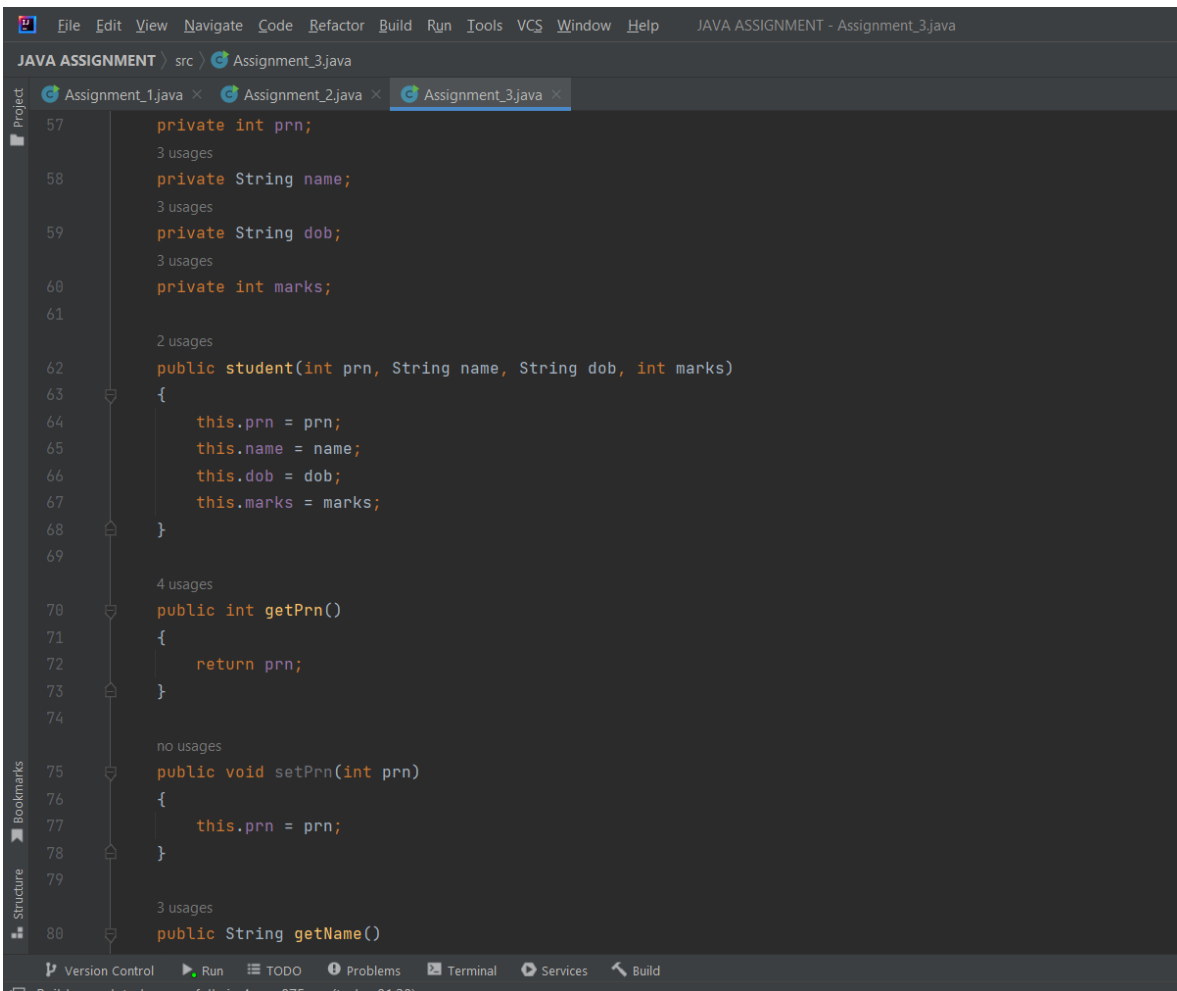


```
1  import java.util.*;
2
3  public class Assignment_3
4  {
5      public static void main(String[] args)
6      {
7          student_functions student_functions_object = new student_functions();
8
9          // menu for add, display, search, update, delete
10         while(true)
11         {
12             System.out.println("Select the operation to modify database: ");
13             System.out.println("0. Exit");
14             System.out.println("1. Add student details");
15             System.out.println("2. Display all");
16             System.out.println("3. Search student");
17             System.out.println("4. Update Details");
18             System.out.println("5. Delete record");
19
20             Scanner sc = new Scanner(System.in);
21             int choice = sc.nextInt();
22
23             switch(choice)
24             {
25                 case 0:
26                     System.out.println("Exiting...");
27                     break;
28                 case 1:
29                     student_functions_object.add_student();
```

Build completed successfully in 4 sec, 875 ms (today 01:20)



```
29         student_functions_object.add_student();
30         break;
31     case 2:
32         student_functions_object.display();
33         break;
34     case 3:
35         student_functions_object.search();
36         break;
37     case 4:
38         student_functions_object.update();
39         break;
40     case 5:
41         student_functions_object.delete();
42         break;
43     default:
44         System.out.println("Invalid choice");
45     }
46     if(choice==0)
47     {
48         break;
49     }
50 }
51 }
52 }
53 }
54
55 6 usages
56 class student
57 {
58     3 usages
59     private int prn;
```



```
57     private int prn;
58     3 usages
59     private String name;
60     3 usages
61     private String dob;
62     3 usages
63     private int marks;
64
65     2 usages
66     public student(int prn, String name, String dob, int marks)
67     {
68         this.prn = prn;
69         this.name = name;
70         this.dob = dob;
71         this.marks = marks;
72     }
73
74     4 usages
75     public int getPrn()
76     {
77         return prn;
78     }
79
80     no usages
81     public void setPrn(int prn)
82     {
83         this.prn = prn;
84     }
85
86     3 usages
87     public String getName()
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.  
JAVA ASSIGNMENT > src > Assignment_3.java  
Assignment_1.java x Assignment_2.java x Assignment_3.java x  
Project  
80 public String getName()  
81 {  
82     return name;  
83 }  
84  
no usages  
85 public void setName(String name)  
86 {  
87     this.name = name;  
88 }  
89  
1 usage  
90 public String getDob()  
91 {  
92     return dob;  
93 }  
94  
no usages  
95 public void setDob(String dob)  
96 {  
97     this.dob = dob;  
98 }  
99  
1 usage  
100 public int getMarks()  
101 {  
102     return marks;  
103 }  
104  
no usages  
105 public void setMarks(int marks)  
106 {  
107     this.marks = marks;  
108 }  
109 }  
110  
2 usages  
111 class student_functions  
112 {  
113     18 usages  
114     ArrayList<student> student_list = new ArrayList<student>();  
115  
4 usages  
116 public void print_student(int i)  
117 {  
118     System.out.print("Name: " + student_list.get(i).getName()+" | ");  
119     System.out.print("PRN: " + student_list.get(i).getPrn()+" | ");  
120     System.out.print("DOB: " + student_list.get(i).getDob()+" | ");  
121     System.out.print("Marks: " +student_list.get(i).getMarks()+" | \n\n");  
122 }  
123  
1 usage  
124 public void add_student()  
125 {  
126     Scanner sc = new Scanner(System.in);  
127     System.out.println("Enter the number of students to be added: ");  
128     int n = sc.nextInt();  
129  
130     for (int i = 0; i < n; i++)  
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```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.java

JAVA ASSIGNMENT src Assignment_3.java

Assignment_1.java Assignment_2.java Assignment_3.java

131 {
132     System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
133     String details = sc.next();
134
135     String[] details_array = details.split(" ");
136     int prn = Integer.parseInt(details_array[0]);
137
138     String name = details_array[1];
139
140     String dob_string = details_array[2];
141
142     int marks = Integer.parseInt(details_array[3]);
143
144     student new_student = new student(prn, name, dob_string, marks);
145     student_list.add(new_student);
146 }
147 }
148
149 1 usage
150 public void display()
151 {
152     for (int i = 0; i < student_list.size(); i++)
153     {
154         print_student(i);
155     }
156 }
157 1 usage
158 public void search()
159 {
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.java

JAVA ASSIGNMENT src Assignment_3.java

Assignment_1.java Assignment_2.java Assignment_3.java

159
160     System.out.println("Select the search criteria: ");
161     System.out.println("1. PRN");
162     System.out.println("2. Name");
163     System.out.println("3. Position");
164
165     Scanner sc = new Scanner(System.in);
166     int choice = sc.nextInt();
167
168     switch(choice)
169     {
170     case 1:
171         // //Using contains method
172         // System.out.println("Enter the PRN to be searched: ");
173         // int temp_prn = sc.nextInt();
174         // if(student_list.contains(temp_prn)){
175         //     int found = student_list.indexOf(temp_prn);
176         //     print_student(found);
177         // }
178         // else{
179         //     System.out.println("PRN not found");
180         // }
181
182         //OR
183
184         System.out.println("Enter the PRN to be searched: ");
185         int prn = sc.nextInt();
186         for (int i = 0; i < student_list.size(); i++)
187         {
188             if (student_list.get(i).getPrn() == prn)
189             {
```

Build completed successfully in 4 sec, 875 ms (today 01:20)

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.java

JAVA ASSIGNMENT src Assignment_3.java

Assignment_1.java Assignment_2.java Assignment_3.java

189 {
190     print_student(i);
191 }
192 }
193
194 break;
195 case 2:
196     System.out.println("Enter the Name to be searched: ");
197     String name = sc.next();
198     for (int i = 0; i < student_list.size(); i++)
199     {
200         if (student_list.get(i).getName() == name)
201         {
202             print_student(i);
203         }
204     }
205     break;
206 case 3: //position
207     System.out.println("Enter the Position to be searched: ");
208     int position = sc.nextInt();
209     for (int i = 0; i < student_list.size(); i++)
210     {
211         if (i == position)
212         {
213             print_student(i);
214         }
215     }
216     break;
217 default:
218     System.out.println("Invalid choice");
219 }
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.java

JAVA ASSIGNMENT src Assignment_3.java

Assignment_1.java Assignment_2.java Assignment_3.java

219 }
220
221 }
222
223 1 usage
224 public void update()
225 {
226     System.out.println("Enter the PRN of the student to be updated: ");
227     Scanner sc = new Scanner(System.in);
228     int prn = sc.nextInt();
229
230     for (int i = 0; i < student_list.size(); i++)
231     {
232         if (student_list.get(i).getPrn() == prn)
233         {
234             System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
235             String details = sc.next();
236
237             String[] details_array = details.split(" ");
238             int prn_new = Integer.parseInt(details_array[0]);
239
240             String name_new = details_array[1];
241
242             String dob_string_new = details_array[2];
243
244             int marks_new = Integer.parseInt(details_array[3]);
245
246             student new_student = new student(prn_new, name_new, dob_string_new, marks_new);
247             student_list.set(i, new_student);
248         }
249     }
250 }
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.java

JAVA ASSIGNMENT src Assignment_3.java

Assignment_1.java Assignment_2.java Assignment_3.java

243         int marks_new = Integer.parseInt(details_array[3]);
244
245         student new_student = new student(prn_new, name_new, dob_string_new, marks_new);
246         student_list.set(i, new_student);
247     }
248 }
249 }
250
251 1 usage
252 public void delete()
253 {
254     System.out.println("Enter the PRN of the student to be deleted: ");
255     Scanner sc = new Scanner(System.in);
256     int prn = sc.nextInt();
257
258     for (int i = 0; i < student_list.size(); i++)
259     {
260         if (student_list.get(i).getPrn() == prn)
261         {
262             System.out.println("Student named: "+ student_list.get(i).getName() + " deleted successfully");
263             student_list.remove(i);
264         }
265     }
266 }
267
```

OUTPUT :

The screenshot shows an IDE window titled "JAVA ASSIGNMENT - Assignment_3.java". The main editor area displays the following Java code:

```

import java.util.*;

class Student {
    String name;
    int PRN;
    Date DOB;
    int Marks;

    Student(String name, int PRN, Date DOB, int Marks) {
        this.name = name;
        this.PRN = PRN;
        this.DOB = DOB;
        this.Marks = Marks;
    }

    void display() {
        System.out.println("Name: " + name + " | PRN: " + PRN + " | DOB: " + DOB + " | Marks: " + Marks);
    }
}

class StudentDB {
    List<Student> students = new ArrayList<>();

    void addStudent(Student student) {
        students.add(student);
    }

    void displayAll() {
        for (Student student : students) {
            student.display();
        }
    }

    void searchStudent(int PRN) {
        for (Student student : students) {
            if (student.PRN == PRN) {
                student.display();
            }
        }
    }

    void updateDetails(int PRN, String name, Date DOB, int Marks) {
        for (Student student : students) {
            if (student.PRN == PRN) {
                student.name = name;
                student.DOB = DOB;
                student.Marks = Marks;
            }
        }
    }

    void deleteRecord(int PRN) {
        students.removeIf(student -> student.PRN == PRN);
    }
}

public class Assignment_3 {
    public static void main(String[] args) {
        StudentDB db = new StudentDB();

        // Add student details
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
        int PRN = sc.nextInt();
        String name = sc.next();
        Date DOB = new Date(sc.nextInt(), sc.nextInt(), sc.nextInt());
        int Marks = sc.nextInt();
        db.addStudent(new Student(name, PRN, DOB, Marks));

        // Display all
        System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
        int PRN = sc.nextInt();
        String name = sc.next();
        Date DOB = new Date(sc.nextInt(), sc.nextInt(), sc.nextInt());
        int Marks = sc.nextInt();
        db.addStudent(new Student(name, PRN, DOB, Marks));

        // Search student
        System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
        int PRN = sc.nextInt();
        String name = sc.next();
        Date DOB = new Date(sc.nextInt(), sc.nextInt(), sc.nextInt());
        int Marks = sc.nextInt();
        db.addStudent(new Student(name, PRN, DOB, Marks));

        // Update Details
        System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
        int PRN = sc.nextInt();
        String name = sc.next();
        Date DOB = new Date(sc.nextInt(), sc.nextInt(), sc.nextInt());
        int Marks = sc.nextInt();
        db.addStudent(new Student(name, PRN, DOB, Marks));

        // Delete record
        System.out.println("Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks");
        int PRN = sc.nextInt();
        String name = sc.next();
        Date DOB = new Date(sc.nextInt(), sc.nextInt(), sc.nextInt());
        int Marks = sc.nextInt();
        db.addStudent(new Student(name, PRN, DOB, Marks));

        // Display all
        db.displayAll();
    }
}

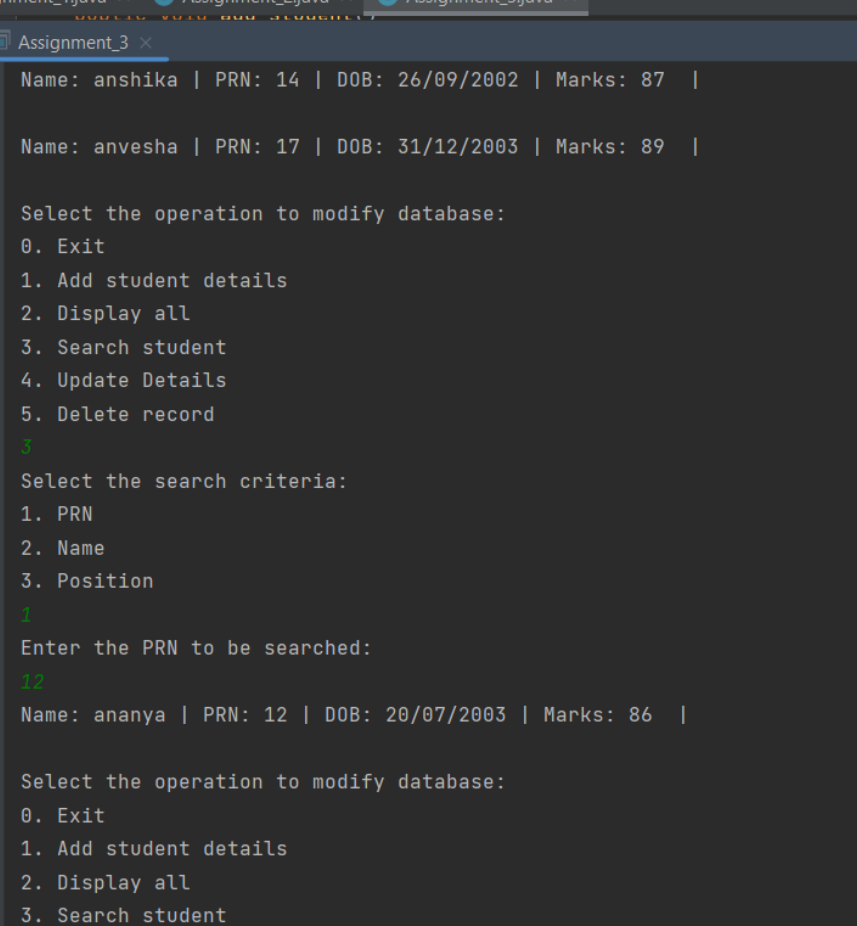
```

The terminal output shows the program running and displaying the following results:

```

C:\Program Files\Java\jdk-19\bin\java.exe "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3\lib\idea_rt.jar=54506: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
1
Enter the number of students to be added:
3
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
12 ananya 20/07/2003 86
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
14 anshika 26/09/2002 87
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
27 ananya 11/12/2003 89
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: ananya | PRN: 12 | DOB: 20/07/2003 | Marks: 86 |
Name: anshika | PRN: 14 | DOB: 26/09/2002 | Marks: 87 |

```



File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignm

JAVA ASSIGNMENT > src > Assignment_3.java > student_functions > add_student

Project: Assignment_1.java Assignment_2.java Assignment_3.java

Run: Assignment_3

```
Name: anshika | PRN: 14 | DOB: 26/09/2002 | Marks: 87 |
Name: anvesha | PRN: 17 | DOB: 31/12/2003 | Marks: 89 |

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:
12

Name: ananya | PRN: 12 | DOB: 20/07/2003 | 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
4

Enter the PRN of the student to be updated:
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignment_3.java
JAVA ASSIGNMENT \src\ Assignment_3.java \student_functions\ add_student
Project Assignment_1.java Assignment_2.java Assignment_3.java
Run: Assignment_3
Enter the details of the student in the following format: PRN, Name, Date of Birth (dd/mm/yyyy), Marks
17 Anvesha 26/09/2002 90
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
5
Enter the PRN of the student to be deleted:
17
Student named:anvesha deleted successfully
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: ananya | PRN: 12 | DOB: 20/07/2003 | Marks: 86 |
Name: Anshika | PRN: 14 | DOB: 26/09/2002 | Marks: 90 |
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
```

```
File Edit View Navigate Code Refactor Build Run Tools VCS Window Help JAVA ASSIGNMENT - Assignm
JAVA ASSIGNMENT \src\ Assignment_3.java \student_functions\ add_student
Project Assignment_1.java Assignment_2.java Assignment_3.java
Run: Assignment_3
5. Delete record
5
Enter the PRN of the student to be deleted:
17
Student named:anvesha deleted successfully
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
0
Name: ananya | PRN: 12 | DOB: 20/07/2003 | Marks: 86 |
Name: Anshika | PRN: 14 | DOB: 26/09/2002 | Marks: 90 |
Select the operation to modify database:
0. Exit
1. Add student details
2. Display all
3. Search student
4. Update Details
5. Delete record
0
Exiting...
Process finished with exit code 0
```

GITHUB LINK :

[https://github.com/ananya2285/Java-Assignment-
/blob/1314deb9dced81f33e43f787e0d9ad6387e85ad0/Assignment_3.java](https://github.com/ananya2285/Java-Assignment-/blob/1314deb9dced81f33e43f787e0d9ad6387e85ad0/Assignment_3.java)