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Data Layer

Student.java

```
package DataLayer;
public class Student {
    public String name, major;
    public int id;
    public Student(String name, String major, int id) {
        this.name = name; this.major = major; this.id = id;
    }
    public String getName() {
        return name;
    }
    public void setName(String name) {
        this.name = name;
    }
    public String getMajor() {
        return major;
    }
    public void setMajor(String major) {
        this.major = major;
    }
    public int getId() {
        return id;
    }
    public void setId(int id) {
        this.id = id;
    }
}
```

Repository.java

```
package DataLayer;

import java.util.Vector;

public class Repository {
    public Vector<Student> Stulist = new Vector<>();
    public void repAdd(Student A) {
        Stulist.add(A);
    }
    public Student repSearch(int id) {
        for(int i = 0; i <= Stulist.size(); i++) {
            if (Stulist.get(i).getId() == id) {
                return Stulist.get(i);
            }
        }
        return null;
    }
}
```

Management Layer

DataManager.java

```
package ManagementLayer;
import DataLayer.*;
public class DataManage{
    Repository V = new Repository();
    public void AddStudent(String name, String major, int id) {
        Student S = new Student(name, major, id);
        V.repAdd(S);
    }
    public String ViewStudent(int id) {
        Student lStu = V.repSearch(id);
        if(lStu == null) {

```

```

        return "no student found matching that id";
    }
    else {
        return "\n=====\\nName:
"+lStu.getName()+"\\nMajor: "+lStu.getMajor()+"\\nID:
"+lStu.getId()+"=====";
    }
}
public String ViewAllStudents() {
    String allStu = "";
    for(int i = 0; i < V.Stulist.size(); i++) {

        allStu += ViewStudent(V.Stulist.get(i).getId());
    }
    return allStu;
}
}

```

UI Layer

Programrunner.java

```

package UILayer;
import ManagementLayer.*;
import java.util.Scanner;
public class ProgramRunner {
public static void main(String args[]){
    DataManage M = new DataManage();
    boolean Run = true;
    Scanner input = new Scanner(System.in);
    M.AddStudent("Majid", "SOEN", 2021);
    M.AddStudent("Khalid", "SOEN", 2022);
    M.AddStudent("Ahmed", "IT", 2023);
    while (Run){
        System.out.println("hello, what would you like to do today?\n1-Add a
new student \n2-View a student \n3-View All students\n4-Exit
Application");

```

```
String choice = input.nextLine();
if (choice.charAt(0) == '1') {
    System.out.println("ID> ");
    String idString = input.nextLine();
    int id = Integer.parseInt(idString);
    System.out.println("Name> ");
    String name = input.nextLine();
    System.out.println("Major> ");
    String major = input.nextLine();
    M.AddStudent(name, major, id);

}
else if (choice.charAt(0) == '2') {
    System.out.println("ID> ");
    String idString = input.nextLine();
    int id = Integer.parseInt(idString);
    System.out.println(M.ViewStudent(id));
}
else if (choice.charAt(0) == '3') {
    System.out.println(M.ViewAllStudents());
}
else if (choice.charAt(0) == '4') {
    System.out.println("Thank you for using our application!");
    Run = false;
    break;
}
else{
    System.out.println("\ninvalid choice, pick again>");
    continue;
}
System.out.println("would you like to perform another
action?\n1-Yes\n2-No");
String again = input.nextLine();
if (again.charAt(0) == '1') {
    Run = true;
    continue;
}
else if (again.charAt(0) == '2'){
    System.out.println("Thank you for using our application!");
    Run = false;
}
```

```
        break;
    }
    else{
        System.out.println("\ninvalid choice, reprinting menu... ");
        Run = true;

    }

    input.close();
}
}
```

User interaction Output

hello, what would you like to do today?

1-Add a new student
2-View a student
3-View All students
4-Exit Application
r4

invalid choice, pick again>

hello, what would you like to do today?

1-Add a new student
2-View a student
3-View All students
4-Exit Application

1

ID>

2025

Name>

Hamad

Major>

Finance

would you like to perform another action?

1-Yes

2-No

1

hello, what would you like to do today?

1-Add a new student

2-View a student

3-View All students

4-Exit Application

2

ID>

2025

=====

Name: Hamad

Major: Finance

ID: 2025

=====

would you like to perform another action?

1-Yes

2-No

1

hello, what would you like to do today?

1-Add a new student

2-View a student

3-View All students

4-Exit Application

3

=====

Name: Majid

Major: SOEN

ID: 2021

=====

Name: Khalid

Major: SOEN

ID: 2022

=====

Name: Ahmed

Major: IT

ID: 2023

=====

Name: Hamad

Major: Finance

ID: 2025

=====

would you like to perform another action?

1-Yes

2-No

2

Thank you for using our application!