

**Mastering Embedded System Online  
Diploma**

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**First Term (Final Project 2 )  
Student Management System using queue**

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# **1. Intro**

Student Management System using queue is a c program to manage a school database. You can use it to add students manually or from text file , also can extract your database in text file and can search , delete or update database.

## **2. Problem Statement**

### **1) add manually**

add student manually to database by entering roll number , first ,last name ,GPA, number of enrolled courses and id of enrolled courses.

### **2) Add from text file**

Add Information from text file in the same direction of .exe file. The information is separated by space to can designate between it.

### **3) Search on student**

You can find student and it information by:

#### **A) Roll number**

You will get the student information id it excited or error message if not.

#### **B) First name**

You will get all the student has the first name which you search and total number of this students or error message if not.

#### **4) Get Students who Enrolled in a course**

You will get all the students that enrolled in searched course and their information or error message that the course is not correct.

#### **5) Get Total Student in database**

It display the total students in the database and how many you can add.

#### **6) Delete Student Info**

You can delete last student if you entered it incorrectly or delete student by it's roll number if program found it, it will be deleted successfully if not will display error message roll number isn't founded.

#### **7) Update Info**

In update section you can update each info individually or all info of any student.

#### **8) Sort database by Roll number**

It sort database in ascending order from 1 to last number in your database.

## 9) Extract database to text file

Extract database after modifying it to text file in the same direction of .exe file.

## 3. Test Cases

### a) Add Student Manually

```
F:\work_space\learn_in_depth\Term1_Projects\Term1_Project2\Debug\Std_management System.exe
Welcome to School Management System

-----
Choose The Task that you want to perform
1. Add a Student Manually
2. Add a Student From Text File
3. Find a Student by Roll Number
4. Find a Student by First Name
5. Find a Student by Course ID
6. Find a Total number of Students
7. Delete Student
8. Update Student
9. Extract Students database to Text File
10. Show all information
11. Sort Students according to roll number
0. Exit
Enter your choice to perform the task
1
Enter Student Roll Number : 1
Enter Student 1st Name : ahmed
Enter Student last Name : nasser
Enter Student GPA:4
Enter Number of enrolled Courses: 1
Enter Student enrolled Courses_id:
Course1 id: 121
[ERROR]wrong course_id
Enter Number of enrolled Courses: 1
Enter Student enrolled Courses_id:
Course1 id: 333
```

Steps of adding manually.

```
0. Exit
Enter your choice to perform the task
1

Enter Student Roll Number : 2

[ERROR]This roll_number is Founded , it should be unique
Enter Student Roll Number :
```

Message if you repeat unique roll number.

```
0. Exit
Enter your choice to perform the task
1

[ERROR]The database is Full.....You Can't add more. please increase the size in configuration section.
-----
```

Message if the database is Full and you try to add student.

## b) Add Students From file

```
-----  
Choose The Task that you want to perform  
1. Add a Student Manually  
2. Add a Student From Text File  
3. Find a Student by Roll Number  
4. Find a Student by First Name  
5. Find a Student by Course ID  
6. Find a Total number of Students  
7. Delete Student  
8. Update Student  
9. Extract Students database to Text File  
10. Show all information  
11. Sort Students according to roll number  
0. Exit  
Enter your choice to perform the task
```

2

```
[ERROR] Roll Number 1 is already taken ... so it was skipped  
[INFO] Roll Number 15 Saved Successfully  
[INFO] Roll Number 2 Saved Successfully  
[INFO] Roll Number 3 Saved Successfully  
[INFO] Roll Number 4 Saved Successfully  
[INFO] Roll Number 5 Saved Successfully  
[INFO] Roll Number 6 Saved Successfully  
[INFO] Roll Number 10 Saved Successfully  
[INFO] Roll Number 9 Saved Successfully  
[INFO] Roll Number 8 Saved Successfully  
[INFO] Roll Number 7 Saved Successfully  
[INFO] Roll Number 11 Saved Successfully  
[INFO] Roll Number 12 Saved Successfully  
[INFO] Roll Number 17 Saved Successfully  
[INFO] Roll Number 16 Saved Successfully  
[INFO] Roll Number 14 Saved Successfully  
[INFO] Roll Number 13 Saved Successfully  
[INFO] Roll Number 18 Saved Successfully  
[INFO] Roll Number 25 Saved Successfully  
[INFO] Roll Number 30 Saved Successfully  
[INFO] Roll Number 26 Saved Successfully  
[INFO] Roll Number 28 Saved Successfully  
[INFO] Roll Number 27 Saved Successfully
```

When adding information from file it start to add student by student.

If saved successfully it will show message and if the roll number is repeated program will skip it as shown.

```
[INFO] Roll Number 44 Saved Successfully
[INFO] Roll Number 43 Saved Successfully
[INFO] Roll Number 29 Saved Successfully
[INFO] Roll Number 48 Saved Successfully
[INFO] Roll Number 50 Saved Successfully
[INFO] Roll Number 49 Saved Successfully
Roll Number : 1
First Name : ahmed
Last Name : nasser
GPA : 4.00
Enrolled Courses id : 333
Roll Number : 15
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 2
First Name : Mohamed
Last Name : Ahmed
GPA : 4.00
Enrolled Courses id : 208 309 322 351 323
Roll Number : 3
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 4
First Name : Mona
Last Name : Youssef
GPA : 3.10
Enrolled Courses id : 441 141 351 309 208
Roll Number : 5

F:\work_space\learn_in_depth\Term1_Projects\Term1_Project2\Debug\Std_management System.exe
Roll Number : 44
First Name : Mona
Last Name : Youssef
GPA : 3.10
Enrolled Courses id : 441 141 351 309 208
Roll Number : 43
First Name : Ali
Last Name : Mohamed
GPA : 4.20
Enrolled Courses id : 211 441 323 208 309
Roll Number : 29
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141 333 351 322 211
Roll Number : 48
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141 333 351 322 211
Roll Number : 50
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141 333 351 322 211
Roll Number : 49
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141 333 351 322 211
[INFO]Total number of students is 50
[INFO]You can add up to 50 Students
[INFO]You can add 0 more Students
-----
```

After add all students in file it will display this information and tell you the number of student in database .



### c) Search Student by Roll number

F:\work\_space\learn\_in\_depth\Term1\_Projects\Term1\_Project2\Debug\Std\_management System.exe

```
-----  
Choose The Task that you want to perform  
1. Add a Student Manually  
2. Add a Student From Text File  
3. Find a Student by Roll Number  
4. Find a Student by First Name  
5. Find a Student by Course ID  
6. Find a Total number of Students  
7. Delete Student  
8. Update Student  
9. Extract Students database to Text File  
10. Show all information  
11. Sort Students according to roll number  
0. Exit  
Enter your choice to perform the task  
3  
Enter Student Roll Number You want to Find: 23  
  
Roll Number : 23  
First Name : Yasser  
Last Name : Fathy  
GPA : 3.90  
Enrolled Courses id : 141 333 351 322 211  
-----
```

After search by roll number it's information will be displayed .

```
Enter your choice to perform the task  
3  
Enter Student Roll Number You want to Find: 100  
[ERROR]This Roll Number is not founded!!  
Enter Student Roll Number You want to Find:
```

And if you search by wrong id it will display that the roll is not founded and call function again to enter correct one.

## d)Search Student by First Name

```
F:\work_space\learn_in_depth\Term1_Projects\Term1_Project2\Debug\Std_management System.exe
11. Sort Students according to roll number
0. Exit
Enter your choice to perform the task
4

Enter Student First Name You want to Find: ahmed

Roll Number : 1
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 10
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 17
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 25
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 40
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 47
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333

[INFO]6 Students has ahmed in their first name
-----
```

After entering first name you want , the all students has the same name will be displayed and info message tell you the total number of this students.

```
Enter your choice to perform the task
4

Enter Student First Name You want to Find: xx

[ERROR]This Name is not founded!!
Enter Student First Name You want to Find:
```

If no one has the same name you searched error message will be displayed.

## e) Get Students Enrolling in Course

```
9. Extract Students database to Text File
10. Show all information
11. Sort Students according to roll number
0. Exit
Enter your choice to perform the task
5
Enter Course id You want to Find Students who enrolling on it: 301

Roll Number : 1
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 15
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 3
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 10
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 8
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 17
First Name : Ahmed
```

```

Roll Number : 25
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 26
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 33
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 40
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 38
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 47
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301 211 441 141 333
Roll Number : 45
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
[INFO]13 rolled in This Course
-----

```

When you enter the correct id of any course , the program will display information of all students had enrolled in this course and tell you the number of this students.

```

Enter Course id You want to Find Students who enrolling on it: 0
[ERROR]This Course id is not founded!!
Enter Course id You want to Find Students who enrolling on it:

```

And if the course id is wrong , it will display that the id is not founded and call function again to enter correct one.

## f)Find total Students

```
-----  
Choose The Task that you want to perform  
1. Add a Student Manually  
2. Add a Student From Text File  
3. Find a Student by Roll Number  
4. Find a Student by First Name  
5. Find a Student by Course ID  
6. Find a Total number of Students  
7. Delete Student  
8. Update Student  
9. Extract Students database to Text File  
10. Show all information  
11. Sort Students according to roll number  
0. Exit  
Enter your choice to perform the task  
6
```

```
-----  
[INFO]Total number of students is 50  
[INFO]You can add up to 50 Students  
[INFO]You can add 0 more Students  
-----  
-----
```

It display database capacity , how many you inserted and how many you still can add.



## g) Delete Student

```
-----  
Choose The Task that you want to perform  
1. Add a Student Manually  
2. Add a Student From Text File  
3. Find a Student by Roll Number  
4. Find a Student by First Name  
5. Find a Student by Course ID  
6. Find a Total number of Students  
7. Delete Student  
8. Update Student  
9. Extract Students database to Text File  
10. Show all information  
11. Sort Students according to roll number  
0. Exit  
Enter your choice to perform the task  
7  
  
Choice what You want to do  
1-Delete Last Student  
2-Delete Specific Student by Roll Number  
1  
  
[INFO]Delete Done  
-----
```

Delete section has two options : delete last element and after deleting info message will be displayed or delete student by roll number.

```

Enter your choice to perform the task
7

Choice what You want to do
1-Delete Last Student
2-Delete Specific Student by Roll Number
2

Enter Student Roll Number You want to Delete: 1

[INFO]Delete Roll 1 is done successfully
-----

```

After enter roll number you want to delete inf message will be displayed. And as shown in next figure roll 1 is deleted successfully.

```

11. Sort Students according to roll number
0. Exit
Enter your choice to perform the task
10
Roll Number : 2
First Name : Mohamed
Last Name : Ahmed
GPA : 4.00
Enrolled Courses id : 208 309 322 351 323
Roll Number : 3
First Name : Mina
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208 333 351 211 301
Roll Number : 4
First Name : Mona
Last Name : Youssef
GPA : 3.10
Enrolled Courses id : 441 141 351 309 208
Roll Number : 5
First Name : Ali
Last Name : Mohamed
GPA : 4.20
Enrolled Courses id : 211 441 323 208 309
Roll Number : 6
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141 333 351 322 211
Roll Number : 7

```

*Note: In the original image, a red circle highlights the number '2' next to 'Roll Number :', and a red arrow points from the number '10' to this circle.*

```
Enter your choice to perform the task
7

Choice what You want to do
1-Delete Last Student
2-Delete Specific Student by Roll Number
2

Enter Student Roll Number You want to Delete: 100

[ERROR]Roll 100 is not founded
-----
```

If you entered wrong roll number , error message will displayed to tell you this roll isn't founded.



## h) Update Student Info

### 1) Update all info

Can be replaced by delete student and then enter him again but it's extra.

```
Enter your choice to perform the task
8
Enter Student Roll Number You want to Update: 2
Roll Number : 2
First Name : Mohamed
Last Name : Ahmed
GPA : 5.00
Enrolled Courses id : 208    309    322    351    323
Choose which part you need to update
1. all info
2. Roll Number
3. First Name
4. Last Name
5. GPA
6. Enrolled Courses
Enter Your choice1
Enter New Student Roll Number : 2
[ERROR]This Roll Number is not Repeated !! Try Again
Enter New Student Roll Number : 1
[ERROR]This Roll Number is not Repeated !! Try Again
Enter New Student Roll Number : 0
Enter Student 1st Name : edited
Enter Student last Name: last
Enter Student GPA:3
Enter Number of enrolled Courses: 1
Enter Student enrolled Courses_id:
Course1 id: 333
```

After enter roll , it will be checked if no founded will display error message . and if it found roll it will

display fields to enter info one by one.the result is below.

```
Enter Student Roll Number You want to Update: 0

Roll Number : 0
First Name : edited
Last Name : last
GPA : 3.00
Enrolled Courses id : 333
```

## 2) Update roll number

Update only roll number of the student and new roll number must be unique.

```
Enter your choice to perform the task
8

Enter Student Roll Number You want to Update: 1

Roll Number : 1
First Name : edited
Last Name : yasser
GPA : 3.00
Enrolled Courses id : 333 141
Choose which part you need to update
1. all info
2. Roll Number
3. First Name
4. Last Name
5. GPA
6. Enrolled Courses

Enter Your choice2

Enter New Student Roll Number : 100
```

Here I change roll number of 1 to 100 and the result is below.

```
Roll Number : 100
First Name : edited
Last Name : yasser
GPA : 3.00
Enrolled Courses id : 333 141
Choose which part you need to update
```

### 3) Update First name only

Here I change (ahmed) to (edited) and the steps and result is below.

```
Enter your choice to perform the task
8
Enter Student Roll Number You want to Update: 1
Roll Number : 1
First Name : ahmed
Last Name : yasser
GPA : 4.00
Enrolled Courses id : 333 141
Choose which part you need to update
1. all info
2. Roll Number
3. First Name
4. Last Name
5. GPA
6. Enrolled Courses
Enter Your choice3
Enter Student 1st Name : edited
```

```
Roll Number : 1
First Name : edited
Last Name : yasser
GPA : 4.00
Enrolled Courses id : 333 141
```

#### 4) update last name

Here I change (nasser) to (yasser) and the steps and result is below.

```
Enter your choice to perform the task
8
Enter Student Roll Number You want to Update: 1
Roll Number : 1
First Name : ahmed
Last Name : nasser
GPA : 4.00
Enrolled Courses id : 333 141
Choose which part you need to update
1. all info
2. Roll Number
3. First Name
4. Last Name
5. GPA
6. Enrolled Courses
Enter Your choice4
Enter Student last Name : yasser
-----
```

```
Roll Number : 1
First Name : ahmed
Last Name : yasser
GPA : 4.00
Enrolled Courses id : 333 141
```

## 5) Update GPA

Here I change (4.00) to (5.00) and the steps and result is below.

```
Enter your choice to perform the task
8
Enter Student Roll Number You want to Update: 2
Roll Number : 2
First Name : Mohamed
Last Name : Ahmed
GPA : 4.00
Enrolled Courses id : 208    309    322    351    323
Choose which part you need to update
1. all info
2. Roll Number
3. First Name
4. Last Name
5. GPA
6. Enrolled Courses
Enter Your choice5
Enter Student GPA:5
```

```
Roll Number : 2
First Name : Mohamed
Last Name : Ahmed
GPA : 5.00
Enrolled Courses id : 208    309    322    351    323
```

## 6) Update enrolled courses

First you enter number of course and then enter courses id one by one.

```
11. Sort Students according to roll number
0. Exit
Enter your choice to perform the task
8

Enter Student Roll Number You want to Update: 1

Roll Number : 1
First Name : ahmed
Last Name : nasser
GPA : 4.00
Enrolled Courses id : 333
Choose which part you need to update
1. all info
2. Roll Number
3. First Name
4. Last Name
5. GPA
6. Enrolled Courses

Enter Your choice6

Enter Number of enrolled Courses: 2

Enter Student enrolled Courses_id:
Course1 id: 333
Course2 id: 141
```

```
Roll Number : 1
First Name : ahmed
Last Name : nasser
GPA : 4.00
Enrolled Courses id : 333 141
Choose which part you need to update
```










## i) Extract Students database to Text File

```
-----  
Choose The Task that you want to perform  
1. Add a Student Manually  
2. Add a Student From Text File  
3. Find a Student by Roll Number  
4. Find a Student by First Name  
5. Find a Student by Course ID  
6. Find a Total number of Students  
7. Delete Student  
8. Update Student  
9. Extract Students database to Text File  
10. Show all information  
11. Sort Students according to roll number  
0. Exit  
Enter your choice to perform the task  
9  
[INFO] Writing on File Successfully  
-----
```

It extract data to text file as shown below.

I add data from file (std\_management.txt)  
and sort it then extracted it to  
file(std\_management\_extracted.txt)

Name	Date modified	type	Size
 main.o	8/2/2022 4:32 PM	O File	32 KB
 Std_management System.exe	8/2/2022 4:32 PM	Application	120 KB
 Std_management.o	8/2/2022 4:32 PM	O File	56 KB
 student_database.txt	10/17/2021 4:47 PM	Text Document	2 KB
 student_database_extracted.txt	8/25/2022 10:12 PM	Text Document	3 KB
 t.o	10/13/2021 3:51 PM	O File	9 KB

 student\_database\_extracted.txt - Notepad

File Edit Format View Help

```

1 Ahmed Nasser 3.50 301 211 441 141 333
2 Mohamed Ahmed 4.00 208 309 322 351 323
3 Mina Magdy 2.90 208 333 351 211 301
4 Mona Youssef 3.10 441 141 351 309 208
5 Ali Mohamed 4.20 211 441 323 208 309
6 Yasser Fathy 3.90 141 333 351 322 211
7 Mona Youssef 3.10 441 141 351 309 208
8 Mina Magdy 2.90 208 333 351 211 301
9 Mohamed Ahmed 4.00 208 309 322 351 323
10 Ahmed Nasser 3.50 301 211 441 141 333
11 Ali Mohamed 4.20 211 441 323 208 309
12 Yasser Fathy 3.90 141 333 351 322 211
13 Ali Mohamed 4.20 211 441 323 208 309
14 Mona Youssef 3.10 441 141 351 309 208
15 Mina Magdy 2.90 208 333 351 211 301
16 Mohamed Ahmed 4.00 208 309 322 351 323
17 Ahmed Nasser 3.50 301 211 441 141 333
18 Yasser Fathy 3.90 141 333 351 322 211
19 Yasser Fathy 3.90 141 333 351 322 211
20 Yasser Fathy 3.90 141 333 351 322 211
21 Yasser Fathy 3.90 141 333 351 322 211
22 Yasser Fathy 3.90 141 333 351 322 211
23 Yasser Fathy 3.90 141 333 351 322 211
24 Yasser Fathy 3.90 141 333 351 322 211
25 Ahmed Nasser 3.50 301 211 441 141 333
26 Mina Magdy 2.90 208 333 351 211 301
27 Ali Mohamed 4.20 211 441 323 208 309
28 Mona Youssef 3.10 441 141 351 309 208
29 Yasser Fathy 3.90 141 333 351 322 211
30 Mohamed Ahmed 4.00 208 309 322 351 323
31 Yasser Fathy 3.90 141 333 351 322 211
32 Mohamed Ahmed 4.00 208 309 322 351 323
33 Mina Magdy 2.90 208 333 351 211 301
34 Mona Youssef 3.10 441 141 351 309 208
35 Ali Mohamed 4.20 211 441 323 208 309
36 Yasser Fathy 3.90 141 333 351 322 211
37 Mona Youssef 3.10 441 141 351 309 208
38 Mina Magdy 2.90 208 333 351 211 301
39 Mohamed Ahmed 4.00 208 309 322 351 323
40 Ahmed Nasser 3.50 301 211 441 141 333
41 Ali Mohamed 4.20 211 441 323 208 309
42 Yasser Fathy 3.90 141 333 351 322 211
43 Ali Mohamed 4.20 211 441 323 208 309

```



## j)Display Database

F:\work\_space\learn\_in\_depth\Term1\_Projects\Term1\_Project2\Debug\Std\_management System.exe

10. Show all information

11. Sort Students according to roll number

0. Exit

Enter your choice to perform the task

10

Roll Number : 2

First Name : Mohamed

Last Name : Ahmed

GPA : 4.00

Enrolled Courses id : 208 309 322 351 323

Roll Number : 3

First Name : Mina

Last Name : Magdy

GPA : 2.90

Enrolled Courses id : 208 333 351 211 301

Roll Number : 4

First Name : Mona

Last Name : Youssef

GPA : 3.10

Enrolled Courses id : 441 141 351 309 208

Roll Number : 5

First Name : Ali

Last Name : Mohamed

GPA : 4.20

Enrolled Courses id : 211 441 323 208 309

Roll Number : 6

First Name : Yasser

Last Name : Fathy

GPA : 3.90

Enrolled Courses id : 141 333 351 322 211

Roll Number : 7

First Name : Mona

Last Name : Youssef

GPA : 3.10

Enrolled Courses id : 441 141 351 309 208

Roll Number : 8

First Name : Mina

Last Name : Magdy

GPA : 2.90

Enrolled Courses id : 208 333 351 211 301

It display all database .

## k) Sort Students By roll Number

```
-----  
Choose The Task that you want to perform  
1. Add a Student Manually  
2. Add a Student From Text File  
3. Find a Student by Roll Number  
4. Find a Student by First Name  
5. Find a Student by Course ID  
6. Find a Total number of Students  
7. Delete Student  
8. Update Student  
9. Extract Students database to Text File  
10. Show all information  
11. Sort Students according to roll number  
0. Exit  
Enter your choice to perform the task  
11  
[INFO]Sort done successfully  
-----
```

It sort the database by roll in ascending order as shown below.

F:\work\_space\learn\_in\_depth\Term1\_Projects\Term1\_Project2\Debug\Std\_management System.exe

```
Last Name : Magdy
GPA : 2.90
Enrolled Courses id : 208      333      351      211      301
Roll Number : 16
First Name : Mohamed
Last Name : Ahmed
GPA : 4.00
Enrolled Courses id : 208      309      322      351      323
Roll Number : 17
First Name : Ahmed
Last Name : Nasser
GPA : 3.50
Enrolled Courses id : 301      211      441      141      333
Roll Number : 18
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141      333      351      322      211
Roll Number : 19
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141      333      351      322      211
Roll Number : 20
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141      333      351      322      211
Roll Number : 21
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141      333      351      322      211
Roll Number : 22
First Name : Yasser
Last Name : Fathy
GPA : 3.90
Enrolled Courses id : 141      333      351      322      211
Roll Number : 23
First Name : Yasser
Last Name : Fathy
```

Enrolled Courses id : 141 333 351 322 211  
Roll Number : 43  
First Name : Ali  
Last Name : Mohamed  
GPA : 4.20  
Enrolled Courses id : 211 441 323 208 309  
Roll Number : 44  
First Name : Mona  
Last Name : Youssef  
GPA : 3.10  
Enrolled Courses id : 441 141 351 309 208  
Roll Number : 45  
First Name : Mina  
Last Name : Magdy  
GPA : 2.90  
Enrolled Courses id : 208 333 351 211 301  
Roll Number : 46  
First Name : Mohamed  
Last Name : Ahmed  
GPA : 4.00  
Enrolled Courses id : 208 309 322 351 323  
Roll Number : 47  
First Name : Ahmed  
Last Name : Nasser  
GPA : 3.50  
Enrolled Courses id : 301 211 441 141 333  
Roll Number : 48  
First Name : Yasser  
Last Name : Fathy  
GPA : 3.90  
Enrolled Courses id : 141 333 351 322 211  
Roll Number : 49  
First Name : Yasser  
Last Name : Fathy  
GPA : 3.90  
Enrolled Courses id : 141 333 351 322 211  
Roll Number : 50  
First Name : Yasser  
Last Name : Fathy