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Mastering Embedded System Online Diploma

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First Term (Final Project 2)

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Features :

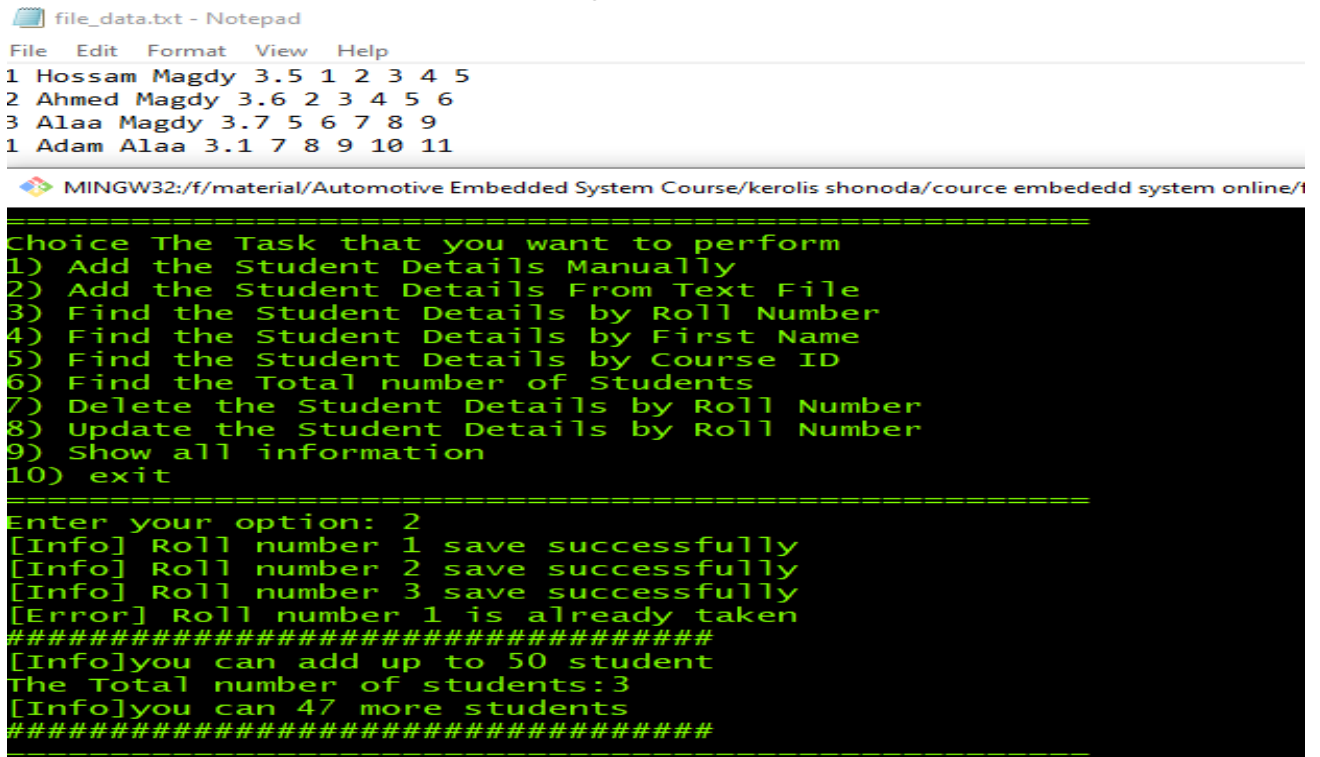
- 1) Add student data from file.
- 2) Add student data manually.
- 3) Find the student by the given roll number.
- 4) Find the student by the given first name.
- 5) Find the student registered by course id.
- 6) Total number of students saved.
- 7) Show all data of students.
- 8) Delete the student by the given roll number.
- 9) Update student by the given roll number.
- 10) Exit from program.

➤ Add student data from file:

Read data from file name is “file_data.txt”, check roll number of student in file is not the same by using function “F_checkRoll”, this function return Boolean number (True or False), if return true(1) this means roll number not saved before, either in the case of return false(0) print error because this student number already saved before.

```
99 /*function read data of students in file */
100 fifo_status Add_studentFile(fifo_buff* fifo ){
101     student_info *ptr = fifo->head;
102     int data,id[5];
103     float gpa;
104     char student_fname[20];
105     char student_lname[20];
106     if(!fifo->base || !fifo->head || !fifo->tail)
107         return FIFO_NULL;
108     if(FIFO_full(fifo) == FIFO_FULL)
109         return FIFO_FULL;
110
111     FILE *info_ptr = fopen("file_data.txt","r"); // read only
112
113     if( info_ptr == 0 ){
114         DPRINTF("file can't be read\n");
115         return FIFO_ERROR;
116     }
117
118     while(fscanf(info_ptr,"%d %s %s %f %d %d %d %d %d\n", &data, student_fname,student_lname,&gpa,&id[0],&id[1],&id[2],&id[3],&id[4]
119     {
120         if(FIFO_full(fifo) == FIFO_FULL){
121             DPRINTF("[Info]you can add up to 50 student\n");
122             DPRINTF("The Total number of students:%d\n",fifo->count);
123             DPRINTF("[Info]you can %d more students \n",50-fifo->count);
124             return FIFO_FULL;
125         }
126
127         if(F_checkRoll(data,fifo) ==0){
128             DPRINTF("[Error] Roll number %d is already taken\n",data);
129         }
130
131         else {
132             DPRINTF("[Info] Roll number %d save successfully\n",data);
133             ptr->roll = data;
134             strcpy(ptr->fname,student_fname);
135             strcpy(ptr->lname,student_lname);
136         }
```

Figure (1)



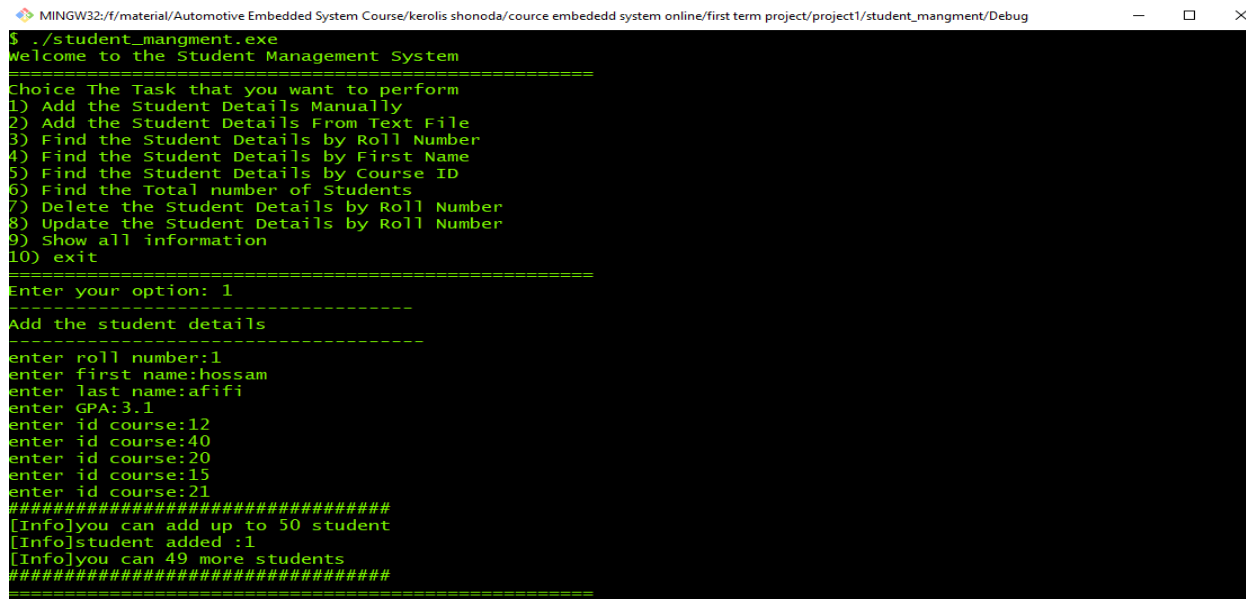
```
file_data.txt - Notepad
File Edit Format View Help
1 Hossam Magdy 3.5 1 2 3 4 5
2 Ahmed Magdy 3.6 2 3 4 5 6
3 Alaa Magdy 3.7 5 6 7 8 9
1 Adam Alaa 3.1 7 8 9 10 11

MINGW32:/f/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 2
[Info] Roll number 1 save successfully
[Info] Roll number 2 save successfully
[Info] Roll number 3 save successfully
[Error] Roll number 1 is already taken
#####
[Info]you can add up to 50 student
The Total number of students:3
[Info]you can 47 more students
#####
=====
```

Figure (2): read elements from file

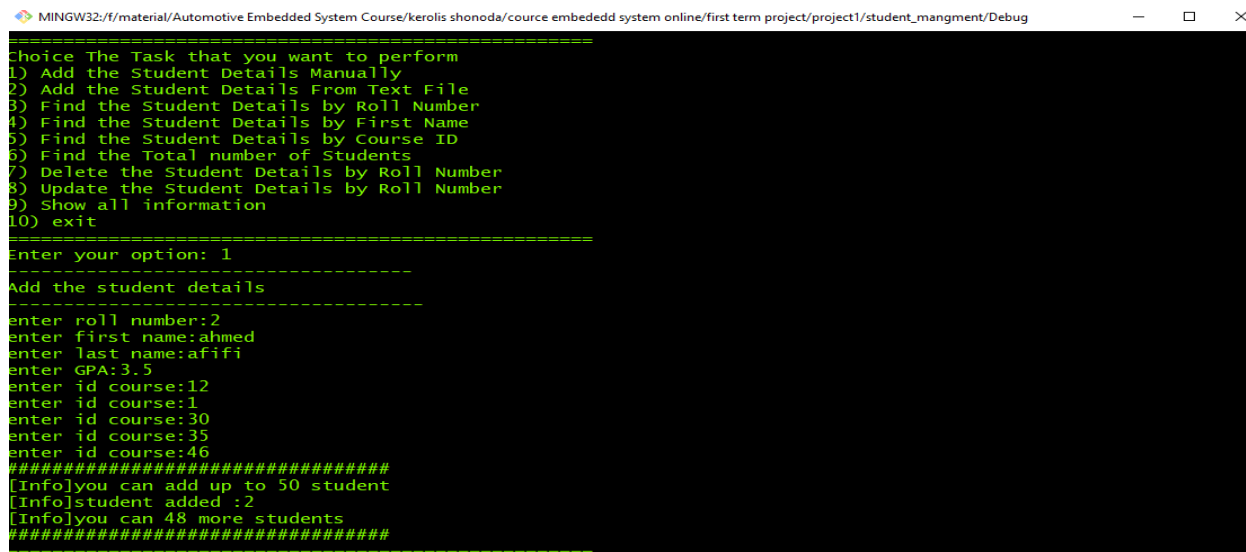
➤ Add student data manually:

This function is different to function “Add student data from file” because User who adds data of students ex: (roll number, first name, last name...). check roll number of student in file is not the same by using function “F_checkRoll”, this function return Boolean number (True or False), if return true(1) this means roll number not saved before, either in the case of return false(0) print error because this student number already saved before.



```
MINGW32/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
$ ./student_mangment.exe
Welcome to the Student Management System
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 1
-----
Add the student details
-----
enter roll number:1
enter first name:hossam
enter last name:afifi
enter GPA:3.1
enter id course:12
enter id course:40
enter id course:20
enter id course:15
enter id course:21
#####
[Info]you can add up to 50 student
[Info]student added :1
[Info]you can 49 more students
#####
=====
```

Figure (3): add first element



```
MINGW32/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 1
-----
Add the student details
-----
enter roll number:2
enter first name:ahmed
enter last name:afifi
enter GPA:3.5
enter id course:12
enter id course:1
enter id course:30
enter id course:35
enter id course:46
#####
[Info]you can add up to 50 student
[Info]student added :2
[Info]you can 48 more students
#####
=====
```

Figure (4): add second element in list

```
MINGW32:/f/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 1
-----
Add the student details
-----
enter roll number:5
enter first name:alaa
enter last name:afifi
enter GPA:3.5
enter id course:17
enter id course:15
enter id course:12
enter id course:40
enter id course:30
#####
[Info]you can add up to 50 student
[Info]student added :3
[Info]you can 47 more students
#####
=====
```

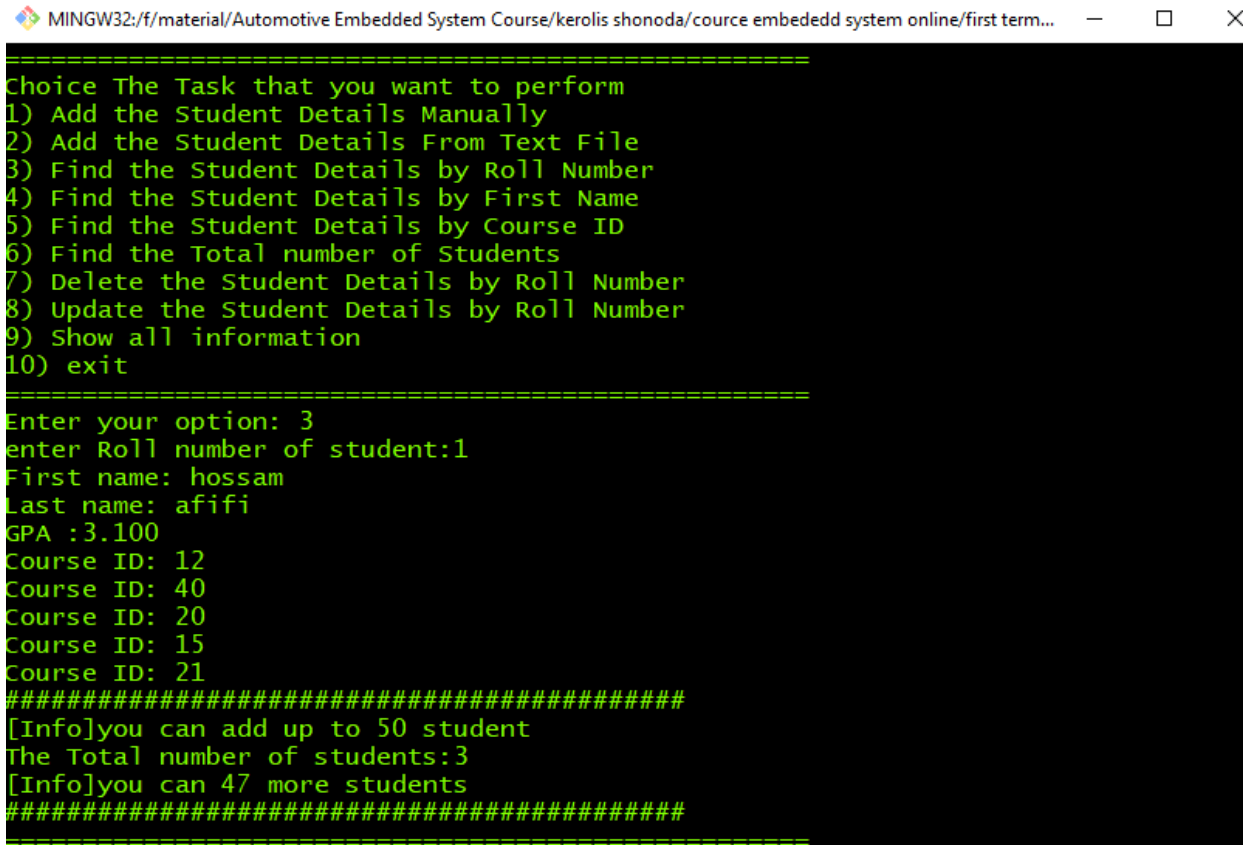
Figure (5): add third element in list

```
MINGW32:/f/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
#####
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 1
-----
Add the student details
-----
enter roll number:2
enter first name:adam
enter last name:alaa
enter GPA:3.3
enter id course:1
enter id course:7
enter id course:8
enter id course:9
enter id course:6
[Error] student not save
#####
[Info]you can add up to 50 student
[Info]student added :3
[Info]you can 47 more students
#####
=====
```

Figure (6): add forth element in list

➤ **Find the student by the given roll number:**

When user choice the option number “3”, you can enter roll number of student show his all information this student.



```
MINGW32:/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term...
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 3
enter Roll number of student:1
First name: hossam
Last name: afifi
GPA :3.100
Course ID: 12
Course ID: 40
Course ID: 20
Course ID: 15
Course ID: 21
#####
[Info]you can add up to 50 student
The Total number of students:3
[Info]you can 47 more students
#####
=====
```

Figure (7): search for all elements in list which have the same roll number entered by user

➤ **Find the student by the given first name**

```
MINGW32/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 4
enter First name of student:ahmed
Roll number of student:2
First name of student:ahmed
Last name of student:afifi
GPA of student:3.500
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
```

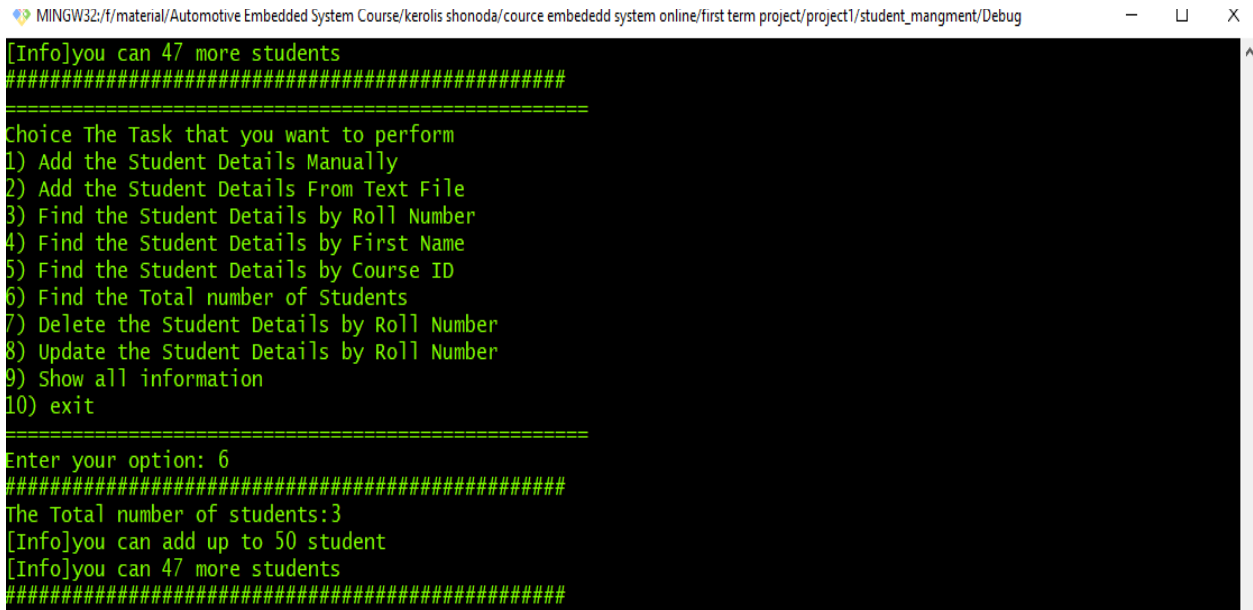
Figure (8): search for all elements in list which have the same first name

➤ **Find the student registered by course id:**

```
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 5
enter course id:1
=====
Roll number of student:2
First name of student:ahmed
Last name of student:afifi
GPA of student:3.500
[Error] course id not found
#####
The Total number of students:3
[Info]you can add up to 50 student
[Info]you can 47 more students
#####
=====
```

Figure (9): search for all elements in list which have the same course id

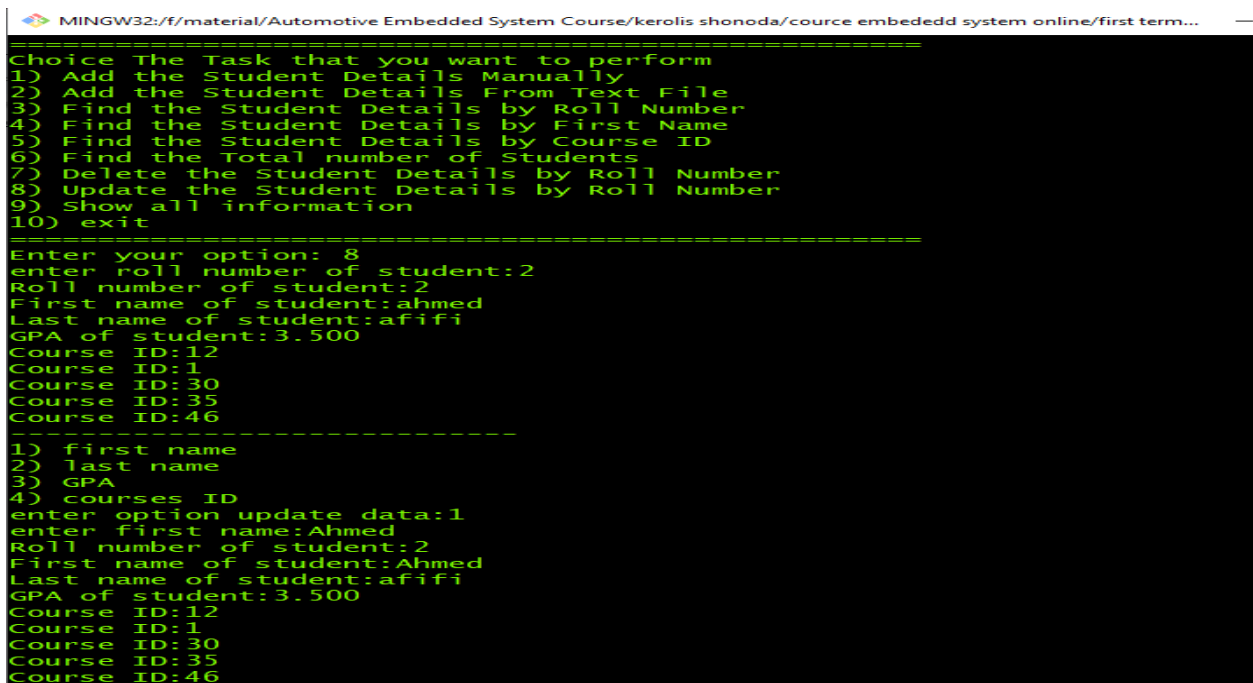
➤ Total number of students saved



```
MINGW32:/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
[Info]you can 47 more students
#####
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 6
#####
The Total number of students:3
[Info]you can add up to 50 student
[Info]you can 47 more students
#####
```

Figure (10): Show number of element saved in list, and max element can be added

➤ Update student by the given roll number:



```
MINGW32:/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term...
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 8
enter roll number of student:2
Roll number of student:2
First name of student:ahmed
Last name of student:afifi
GPA of student:3.500
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
-----
1) first name
2) last name
3) GPA
4) courses ID
enter option update data:1
enter first name:Ahmed
Roll number of student:2
First name of student:Ahmed
Last name of student:afifi
GPA of student:3.500
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
```

Figure (11): update first name for roll number “2”


```
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 8
enter roll number of student:2
Roll number of student:2
First name of student:Ahmed
Last name of student:afifi
GPA of student:3.500
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
-----
1) first name
2) last name
3) GPA
4) courses ID
enter option update data:3
enter GPA:3.56
Roll number of student:2
First name of student:Ahmed
Last name of student:afifi
GPA of student:3.560
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
```

Figure (12): update GPA for roll number “2”

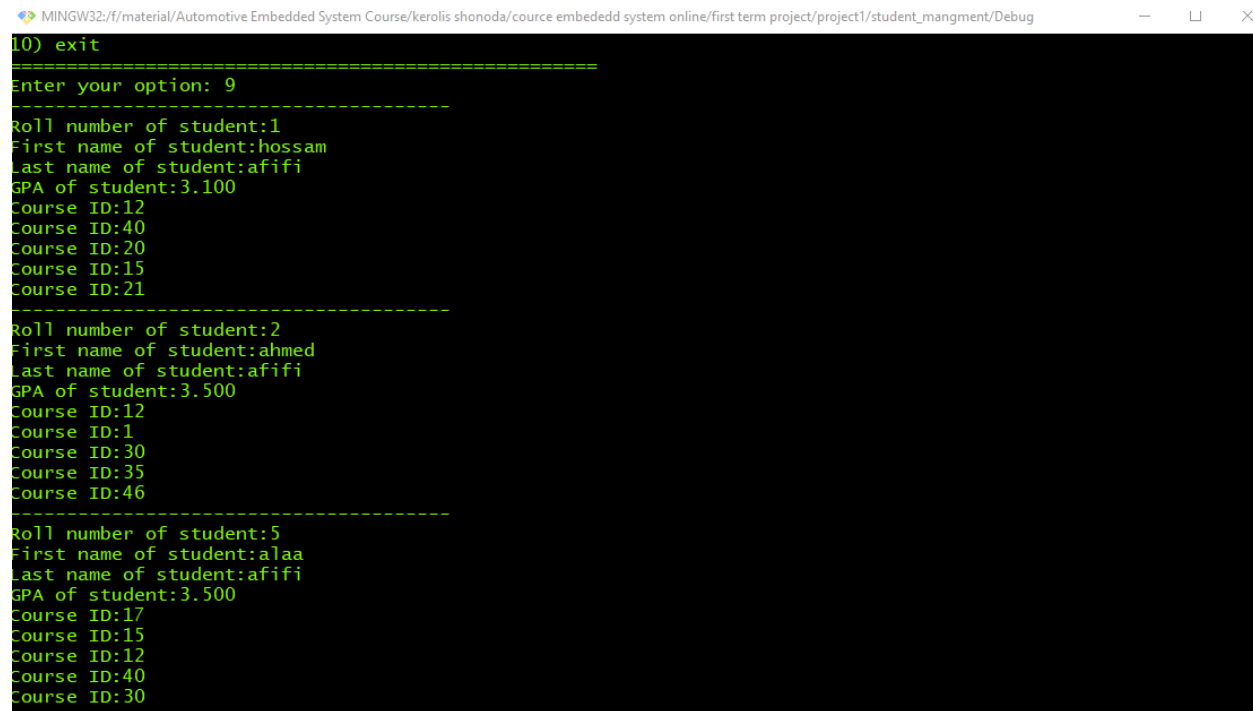
```
=====
Enter your option: 8
enter roll number of student:2
Roll number of student:2
First name of student:Ahmed
Last name of student:afifi
GPA of student:3.560
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
-----
1) first name
2) last name
3) GPA
4) courses ID
enter option update data:4
if you want change once course id enter(1) or change all courses id(2)
1
enter course id:13
enter number course id:1
Roll number of student:2
First name of student:Ahmed
Last name of student:afifi
GPA of student:3.560
Course ID:12
Course ID:13
Course ID:30
Course ID:35
Course ID:46
-----
```

Figure (13): update specific course id for Ahmed

```
#####
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 8
enter roll number of student:1
Roll number of student:1
First name of student:hossam
Last name of student:afifi
GPA of student:3.100
Course ID:12
Course ID:40
Course ID:20
Course ID:15
Course ID:21
-----
1) first name
2) last name
3) GPA
4) courses ID
enter option update data:4
if you want change once course id enter(1) or change all courses id(2)
2
enter course id[1]:1
enter course id[2]:2
enter course id[3]:3
enter course id[4]:4
enter course id[5]:5
#####
[INFO]The Total number of students:2
[INFO]you can add up to 50 student
[INFO]you can 48 more students
#####
```

Figure (14): update all course id for Ahmed

➤ Show all data of students:



The screenshot shows a terminal window with a black background and green text. The window title is "MINGW32:/f/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug". The terminal output shows the program has reached option 9, which displays the details of three students. Each student's data is separated by a dashed line. The data for each student includes their roll number, first and last names, GPA, and a list of course IDs.

```
10) exit
=====
Enter your option: 9
=====
Roll number of student:1
First name of student:hossam
Last name of student:afifi
GPA of student:3.100
Course ID:12
Course ID:40
Course ID:20
Course ID:15
Course ID:21
=====
Roll number of student:2
First name of student:ahmed
Last name of student:afifi
GPA of student:3.500
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
=====
Roll number of student:5
First name of student:alaa
Last name of student:afifi
GPA of student:3.500
Course ID:17
Course ID:15
Course ID:12
Course ID:40
Course ID:30
```

Figure (15): show all elements in queue list

➤ Delete the student by the given roll number:

user enter roll number of student to be delete from queue list, if user enter roll number not found in list will show message “error not found roll number”

```
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
```

```
Enter your option: 7
```

```
Enter Roll Number:1
```

```
#####
```

```
[INFO]The Total number of students:2
```

```
[INFO]you can add up to 50 student
```

```
[INFO]you can 48 more students
```

```
#####
=====
```

Figure (16): delete specific element from queue

```
MINGW32/f:/material/Automotive Embedded System Course/kerolis shonoda/course embededd system online/first term project/project1/student_mangment/Debug
Enter your option: 9
-----
Roll number of student:2
First name of student:ahmed
Last name of student:afifi
GPA of student:3.500
Course ID:12
Course ID:1
Course ID:30
Course ID:35
Course ID:46
-----
Roll number of student:5
First name of student:alaa
Last name of student:afifi
GPA of student:3.500
Course ID:17
Course ID:15
Course ID:12
Course ID:40
Course ID:30
=====
```

Figure (17): Show list FIFO after delete student from list

➤ Exit from program:

```
=====
Choice The Task that you want to perform
1) Add the Student Details Manually
2) Add the Student Details From Text File
3) Find the Student Details by Roll Number
4) Find the Student Details by First Name
5) Find the Student Details by Course ID
6) Find the Total number of Students
7) Delete the Student Details by Roll Number
8) Update the Student Details by Roll Number
9) Show all information
10) exit
=====
Enter your option: 10
##### Thank you #####
```

Figure (18): exit from program