

Mastering Embedded System Online Diploma

First Term - Final Project 2

Student Management System Project

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Problem Statement

Write a program to build simple software for a student information management system that can perform the following operations:

- Store the first name of the student.
- Store the last name of the student.
- Store the unique roll number (ID) for every student.
- Store the GPA of every student.
- Store the courses registered by the student.

Approach

Using a queue to be the database that contains the students Information. There are 10 options each forming individual function specific to its operations used it to handle the Student Information.

- Add the Student Details Manually.
- Add the Student Details Form File.
- Find the Student Details by giving the id Number of Student.
- Find the Student Details by Given Student First Name.
- Find the Student Details by Given Student Last Name.
- Count total Number of Students.
- Delete Specific Student by Given his ID Number.
- Update Student Information by Given his ID Number.
 1. Change Student ID Number.
 2. Change Student First Name.
 3. Change Student Last Name
 4. Change Student Courses.
- Print All Student Information.
- Exit The Program.

Implementation

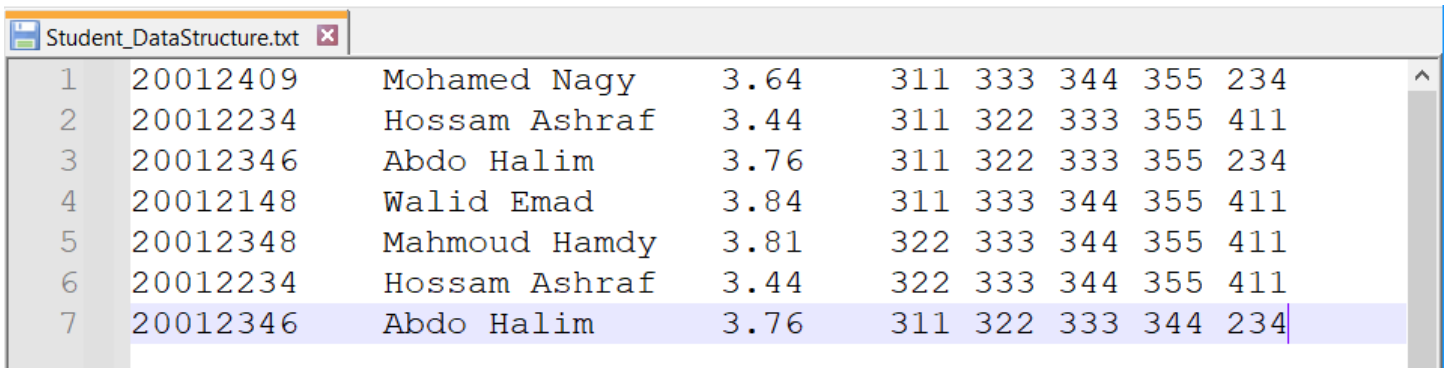
The Project contains four files :

- main.c which has the main program interface and calling functions.
- student.h which has the functions prototypes, a global struct for student data, another global struct for the queue and an array of students to be the buffer.
- student.c which has the functions definitions.
- Student_DataStructure.txt which has a set of student's data.

[To Access Source Files Please Press.](#)

Simulation

The given text file Contains some Students data just as a sample to test the Functions and check that the code is Bus free.



1	20012409	Mohamed Nagy	3.64	311	333	344	355	234
2	20012234	Hossam Ashraf	3.44	311	322	333	355	411
3	20012346	Abdo Halim	3.76	311	322	333	355	234
4	20012148	Walid Emad	3.84	311	333	344	355	411
5	20012348	Mahmoud Hamdy	3.81	322	333	344	355	411
6	20012234	Hossam Ashraf	3.44	322	333	344	355	411
7	20012346	Abdo Halim	3.76	311	322	333	344	234

Test Cases

Add Students Manually

```
E:\New folder (2)\StudentMannagmentSystem\x64\Debug\StudentMannagmentSystem.exe
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 1

=====

Enter Student Data
Enter Student roll Number : 20010245
Enter Student First Name : Mohamed
Enter Student Last Name : Amr
Enter Student GPA : 3.76
Enter Course ID NO.1 : 223
Enter Course ID NO.2 : 433
Enter Course ID NO.3 : 345
Enter Course ID NO.4 : 367
Enter Course ID NO.5 : 335

[INFO] Student Enqueued Successfully
```

Add Students From text File.

```
Select E:\New folder (2)\StudentMannagmentSystem\x64\Debug\StudentMannagmentSystem.exe

*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 2

=====

[INFO] Roll Number 20012409 saved Succsesfully
[INFO] Roll Number 20012234 saved Succsesfully
[INFO] Roll Number 20012346 saved Succsesfully
[INFO] Roll Number 20012148 saved Succsesfully
[INFO] Roll Number 20012348 saved Succsesfully
[ERROR] Roll Number 20012234 already exist
[ERROR] Roll Number 20012346 already exist
[INFO] File Content Saved Successflly

*****
```

Find Student with its ID Number

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit
```

Enter your Choice to Perform the task : 3

=====

Enter Student ID : 20012409
Student with ID:20012409 found

=====

Student ID : 20012409
Student First Name : Mohamed
Student Last Name : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234

=====

Find Student with its First Name

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit
```

Enter your Choice to Perform the task : 4

```
=====
Enter Student First Name : Mohamed
Student with Name : Mohamed found
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last Name : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
```


Find Total Number of Students

```
*****
```

```
* Choose 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 Students Details by Roll Number
- 8- Update the students Details by Roll Number
- 9- Show All Information
- 10- Exit

```
Enter your Choice to Perform the task : 6
```

```
=====
```

```
*****
```

```
* [INFO] The Total Number of Students is 5
```

```
* [INFO] You Can Add up to 50 Students
```

```
* [INFO] You Can Add 45 more Students
```

```
*****
```

Delete Student by Its ID Number

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 7

=====
Entere Student ID : 20012409

[INFO] Student with ID:20012409 Deleted Successfully
```

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 7

=====
Entere Student ID : 20012288

[ERROR] Student with ID:20012288 not Found
```

Update Student Information by Its ID Number

1. Update First Name

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 8

=====
Entere Student ID : 20012409
Student Found
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last NAmE : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====

Allowed Student Parameters to Change :
1-Student ID
2-Student First Name
3-Student Last Name
4-Student GPA
5-Student Course ID
Enter the Required Operation : 2
Enter New Student First Name : Medo

[INFO] Student First Name Updated Successfully
=====
Student ID : 20012409
Student First Name : Medo
Student Last NAmE : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
```

2. Update Second Name

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 8

=====
Entere Student ID : 20012409
Student Found
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last NAmE : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====

Allowed Student Parameters to Change :
1-Student ID
2-Student First Name
3-Student Last Name
4-Student GPA
5-Student Course ID
Enter the Required Operation : 3
Enter New Student Last Name : Ged00o

[INFO] Student Last Name Updated Successfully
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last NAmE : Ged00o
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
```

3. Update ID Number

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 8

=====
Entere Student ID : 20012409
Student Found
=====
Student ID : 20012409
Student First Name : Medo
Student Last NAmE : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====

Allowed Student Parameters to Change :
1-Student ID
2-Student First Name
3-Student Last Name
4-Student GPA
5-Student Course ID
Enter the Required Operation : 1
Enter New Student ID
20011232

[INFO] Student ID Number Updated Successfully
=====
Student ID : 20011232
Student First Name : Medo
Student Last NAmE : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
```

4. Update Specific Course Number

```
*****
* Choose 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 Students Details by Roll Number
8- Update the students Details by Roll Number
9- Show All Information
10- Exit

Enter your Choice to Perform the task : 8

=====
Entere Student ID : 20012409
Student Found
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last NAmE : Ged0oo
Student GPA : 3.64
Course NO.1 has ID : 21
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====

Allowed Student Parameters to Change :
1-Student ID
2-Student First Name
3-Student Last Name
4-Student GPA
5-Student Course ID
Enter the Required Operation : 5
Enter New Course Number to update[1:5] : 1
Enter New Course ID : 122

[INFO] Student Course Number Updated Successfully
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last NAmE : Ged0oo
Student GPA : 3.64
Course NO.1 has ID : 122
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
```

Print All Students

```
Enter your Choice to Perform the task : 9

=====
=====
Student ID : 20012409
Student First Name : Mohamed
Student Last Name : Nagy
Student GPA : 3.64
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
=====
Student ID : 20012234
Student First Name : Hossam
Student Last Name : Ashraf
Student GPA : 3.44
Course NO.1 has ID : 311
Course NO.2 has ID : 322
Course NO.3 has ID : 333
Course NO.4 has ID : 355
Course NO.5 has ID : 411
=====
=====
Student ID : 20012346
Student First Name : Abdo
Student Last Name : Halim
Student GPA : 3.76
Course NO.1 has ID : 311
Course NO.2 has ID : 322
Course NO.3 has ID : 333
Course NO.4 has ID : 355
Course NO.5 has ID : 234
=====
=====
Student ID : 20012148
Student First Name : Walid
Student Last Name : Emad
Student GPA : 3.84
Course NO.1 has ID : 311
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 411
=====
=====
Student ID : 20012348
Student First Name : Mahmoud
Student Last Name : Hamdy
Student GPA : 3.81
Course NO.1 has ID : 322
Course NO.2 has ID : 333
Course NO.3 has ID : 344
Course NO.4 has ID : 355
Course NO.5 has ID : 411
=====

*****
* [INFO] The Total Number of Students is 5
* [INFO] You Can Add up to 50 Students
* [INFO] You Can Add 45 more Students
*****
```