

# **Mastering Embedded System Online Diploma**

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## **First Term (Final Project 2)**

Student Management System

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# **Learn-In-Depth**

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# Student Management System

## Description

The Student Management System is a simple and efficient application built using C programming. It allows users to manage student records by adding, updating, deleting, and searching for students. The system uses a FIFO (First-In, First-Out) buffer to store student data, ensuring smooth and organized data management.

## Key Features

- **Add Student Manually:** Input student details and avoid duplicate roll numbers.
- **Delete Student:** Remove students based on their roll number.
- **Update Student:** Modify student details including name, roll number, GPA, and courses.
- **Find Students:** Search by roll number, first name, or course ID.
- **Show All Information:** Display all student records stored in the buffer.
- **Add from File:** Import student data from a file into the system.

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option:
```

## [1]: Add Student Manually

This feature lets you enter a student's details, like their name, roll number, GPA, and courses, directly into the system. It checks to make sure the roll number isn't already in use, preventing duplicates and ensuring that each student's information is unique and accurate.

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 1
-----
Add the Students Details
-----
Enter the Roll Number: 1
Enter the First Name of Student: beshoy
Enter the Last Name of Student: emad
Enter the GPA you obtained: 3.4
Enter the Course ID of each Course
Course 1 id: 1
Course 2 id: 2
Course 3 id: 5
Course 4 id: 6
Course 5 id: 7
-----
[INFO]:Student added successfully.
-----

Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 1
-----
Add the Students Details
-----
Enter the Roll Number: 1
Enter the First Name of Student: ahmed
Enter the Last Name of Student: atef
Enter the GPA you obtained: 3.5
Enter the Course ID of each Course
Course 1 id: 2
Course 2 id: 5
Course 3 id: 4
Course 4 id: 9
Course 5 id: 6
-----
[ERROR]: The Roll Number is Taken
-----
```

## [2]: Show All Information

This feature displays all student records stored in the system. It provides a complete list of students, showing details like their names, roll numbers, GPAs, and courses. This allows users to easily view and review all the student data in one place.

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 9
*-----*Student data*-----*
Enter the Roll Number: 1
Enter the First Name of Student: beshoy
Enter the Last Name of Student: emad
Enter the GPA you obtained: 3.40
Course 1 id: 1
Course 2 id: 2
Course 3 id: 5
Course 4 id: 6
Course 5 id: 7
-----
Enter the Roll Number: 2
Enter the First Name of Student: martin
Enter the Last Name of Student: george
Enter the GPA you obtained: 3.20
Course 1 id: 2
Course 2 id: 4
Course 3 id: 6
Course 4 id: 5
Course 5 id: 3
-----
```

### [3]: Update Student

This feature allows users to modify existing student records. You can update details such as the student's name, roll number, GPA, and enrolled courses. It ensures that the student information is current and accurate by making it easy to edit records as needed.

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 8
Enter the Roll number to update the entry :2
1. first name
2. last name
3. roll no
4. GPA
5. courses
choose you want updated: 1
Enter the new first name: ahmed
-----
[INFO]: Updated Successfully
-----

Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 8
Enter the Roll number to update the entry :2
1. first name
2. last name
3. roll no
4. GPA
5. courses
choose you want updated: 2
Enter the new last name: tarek
-----
[INFO]: Updated Successfully
-----
```

## [4]: Find Students

This feature enables users to search for specific student records. You can look up students by roll number, first name, or course ID. It helps quickly locate and view the details of a particular student within the system.

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 3
Enter the Roll number of student :1
The student details of Roll Number: 1
-----
```

```
The First Name of Student: beshoy
The Last Name of Student: emad
The GPA you obtained: 3.40
Course 1 id: 1
Course 2 id: 2
Course 3 id: 5
Course 4 id: 6
Course 5 id: 7
-----
```

### Find by Roll Number

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 4
Enter the First Name of student :beshoy
The student details of Roll Number: 1
-----
```

```
The First Name of Student: beshoy
The Last Name of Student: emad
The GPA you obtained: 3.40
Course 1 id: 1
Course 2 id: 2
Course 3 id: 5
Course 4 id: 6
Course 5 id: 7
-----
```

### Find by First Name

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
```

```
Enter your choice to perform the option: 5
Enter the course id: 5
```

```
-----
The first name: beshoy
The last name: emad
The Roll number is: 1
The GPA is: 3.40
```

```
-----
The first name: ahmed
The last name: tarek
The Roll number is: 2
The GPA is: 3.20
```

```
-----
[INFO:] Total Number of Student Enrolled: 2
-----
```

#### Find by Course ID

### [5]: Delete Student:

This feature allows users to remove a student record from the system. By specifying the student's roll number, you can delete their details from the database, ensuring that outdated or incorrect information is removed and the record list remains accurate.

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 7
Enter the Roll Number which you want to delete: 1
-----
The Roll number 1 is removed
[INFO]: The Roll Number is removed Successfully
-----
```

## [6]: Add from File

This feature lets you import student data from an external file into the system. It allows for bulk entry of student records, saving time and effort by automatically adding multiple students' details from a pre-existing file.

```
1 beshoy emad 3.4 1 2 3 4 5
2 martin george 3.5 3 4 7 5 2
1 beshoy emad 3.4 1 2 3 4 5
```

Student.txt

```
Welcome to the Student Management System
choose the option that you want to perform
1. Add the Student Details Manually
2. Add the Student Details From the 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. To Exit
Enter your choice to perform the option: 2
-----
[INFO]: File opened successfully
-----
[INFO]: The Roll Number 1 saved successfully
[INFO]: The Roll Number 2 saved successfully
[ERROR]: The Roll Number 1 is already taken
```