Vision

Provide skilled professionals in Computer Engineering to contribute towards the advancement of technology useful for society and industrial environment.

Mission

M1. Impart need based and value based education by providing exposure of latest tools and technologies in the area of computer engineering to satisfy the stakeholders.

M2. Upgrade and maintain facilities for quality technical education with continuous effort for excellence in Computer Engineering.

M3. Train students with Computer Engineering knowledge to apply it in the general disciplines of design, deployment of software and integration of existing technologies for E-governance and for benefit of society.

M4. Provide a learning ambience to enhance innovations, problem solving skills, leadership qualities, team spirit and ethical responsibilities.

M5. Provide an academic environment and consultancy services to the industry and society in the area of Computer Engineering.

MICRO-PROJECT REPORT

ON

Course Prerequisite management

In Partial fulfilment of Diploma in Computer Engineering

In the subject of

Data Structures using C (CM3407)

By

Mr. Ayush Bulbule (19CM007)

Submitted To

Government Polytechnic, Amravati

(An Autonomous Institute of Govt. of Maharashtra)

Under the guidance of

Mrs. V. R. Rathod Mam

Lecturer in Data Structures using C

Department of Computer Science & Engg.

Government Polytechnic, Amravati

(2020-2021)

Government Polytechnic, Amravati.

(An Autonomous Institute of Govt. of Maharashtra)

Department of Computer Science & Engg.

Certificate

This is to certify that **Mr. Ayush Bulbule** Identity Code **19CM007** of Third Semester Diploma in Computer Engineering has satisfactorily completed the micro project entitled "**Develop a 'C' program to use link list or tree to store different courses and their prerequisites and based on this list it will allow any student to take any course or not**." in **(CM3406) Object Oriented Programming in C++** the academic year 2020-21 as prescribed in curriculum.

Place: Amravati

Date: 05 /02 /2021

Mrs. V. R. Rathod

Lecturer in **Data Structures Using C**

Annexure-I

Title of Micro-Project

Develop a 'C' program to use link list or tree to store different courses and their prerequisites and based on this list it will allow any student to take any course or not

1.0 Brief Introduction

The project entitled "Develop a 'C' program to use link list or tree to store different courses and their prerequisites and based on this list it will allow any student to take any course or not" is a program build in C programming to implement the linked list for real world project.

2.0 Aim of the Micro-Project

This Micro-Project aims at: Develop a 'C' program to use link list to store different courses and their prerequisites and based on this list it will allow any student to take any course or not

1. Learn concepts of Data Structure.
2. Implement Data Structures Concepts in Real World project.

3.0 Action Plan (Sequence and time required for major activities for 8 weeks)

S.N.	Details of activity	Planned start date	Planned Finish date	I. Code &Name of Team Members
1	Gathering Information	2-12-2020	20-12-2020	Bhagyashree Tekade (19CM003)
2	Making report and file	24-12-2021	9-1-2021	Pratham Gaur (19CM020)
3	Preparing the Code of project in C	01-1-2021	22-1-2021	Ayush Bulbule (19CM007)
4	Planning proposal submission	01-02-2021	03-02-2021	Akanksha Shewatkar (19CM057)
5	Gathering content	5-12-2020	12-12-2020	Malhar Joshi (19CM033)

4.0 Resources Required (major resources such as raw material, some machining facility, software etc.)

S.N.	Name of Resource/material	Specifications	Remarks
1	Computer System (System with basic configuration)	__	
2	Visual Studio Code		
3	GCC compiler		
4	M S Word		
5	Windows 10		

5.0 Names of Team Members with Identity Codes :

i. Bhagyashree Tekade (19CM003)
ii. Ayush Bulbule (19CM007)
iii. Pratham Gaur (19CM020)
iv. Malhar Joshi (19CM033)
v. Akanksha Shewatkar (19CM057)

Guideline for Assessment of Micro-Project

Evaluation as per suggested Rubric for Assessment of Micro-Project

Assessment Parameter	Characteristic to be assessed	Average (1 mark)	Good (1.5 mark)	Excellent (2 mark)
Process Assessment (06)	Relevance of the courses & proposals			
	Literature survey/market survey/information collection			
	Analysis of data & completion of the target as per proposal/			
Product Assessment (04)	Report Preparation/Quality of Prototype/model			

Annexure-II

Title of Micro Project

Develop a 'C' program to use link list or tree to store different courses and their prerequisites and based on this list it will allow any student to take any course or not

1.0 Brief Introduction

The project entitled "Supermarket Billing System" is a mini project build in C++ programming Language. This project is basically a console app build with the help of C++ iostream, fstream and other C++ files. This project also have features like Adding, Deleting or Updating a Bill and Printing the Bill.

2.0 Aim of the Micro-Project

This Micro-Project aims at : Develop a 'C' program to use link list or tree to store different courses and their prerequisites and based on this list it will allow any student to take any course or not

1. Learn concepts of Data Structures And Implement Them
2. Learn Concepts of Linked List

2.0 Course Outcomes Integrated

- Create relevant structure to represent the given node using linked list.
- Develop algorithm to insert the given item in linear linked list.
- Develop algorithm to implement linked list to store real data and process on it.

4.0 Actual Procedure Followed

1) Bhagyashree Tekade**:** Gathered information about the Student Course Prerequisite Manage.

2) Ayush Bulbule: Prepared the Code for the program in C

3) Pratham Gaur: Prepared word file related the project with synopsis also.

4) Malhar Joshi: Tested the system and gathered other related info.

5) Akanksha Shewatkar: Planned about and managed submission.

5.0 Actual Resources used (Mention the actual resources used)

S.N.	Name of Resource/material	Specifications	Remarks
1	Computer System (System with basic configuration)	__	
2	Visual Studio Code	**version** 1.52	
3	GCC compiler	Version - 10.2	
4	M S Word	2019	
5	Windows 10	--	

6.0 Output of the Micro-Project

Output of this Micro-Project is attached to this file.

7.0 Skill Developed / Learning outcomes of this Micro-Project

1. To Implement Basic Data Structures
2. Use Various concepts of Data Structure and Develop Algorithms on it
3. Implement these concepts to solve real problems
4. Make use of Linked-List for real project

8.0 Assessment by Faculty as per Rubrics

Process Assessment (06)	Product Assessment (04)	Total Marks (10)	Signature of Faculty

****

Develop a 'C' program to use link list or tree to store different courses and their prerequisites and based on this list it will allow any student to take any course or not

About Project

This is a simple project build in C language which uses the concept of Data Structures. The main concept **is** we want to make allot new courses to our students in new semester, now when any student want to add new course for current semester our system will ensure that the student has studied its prerequisite courses now for this you have to store prerequisites of every course and student already studied courses that will be saved in linked list, and then you will display the student current semester courses list along with this added course or will show an error if the students cannot take that course. So you can say this project also "Student Course Allocation Software".

Working:

The Program first shows the options that can be performed. The it asks for the details of the course that the student want to enroll. After entering the course details the program will check for the prerequisites of the course if it does not have any prerequisites then it will allow student to add this course and add it to the students course List. If the course have some prerequisites then the program will check the prerequisite in the students allotted courses list. If it is present then it will allow the student to take the course. And if the student list does not have the prerequisites then the program will show error. This program also has Functionality to display all the courses.

Data Structure Used:

In this program we use Linked List data structures. The Node in Linked list holds the Course Structure and the link to next node. The Course Structure has all details of a Course.

Program in C:

```c
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>
#include <string.h>

struct Course
{
    char courseCode[8];
    char courseName[30];
    int courseCredits;
    char coursePrereqCode[20];
};
struct CourseList
{
    struct Course data;
    struct CourseList *next;
};
void printCourseList(struct CourseList *ptr)
{
    while (ptr != NULL)
    {
        printf("\nCourse Code = %s", ptr->data.courseCode);
        printf("\nCourse Name = %s", ptr->data.courseName);
        printf("\nCourse credit = %d\n", ptr->data.courseCredits);
        ptr = ptr->next;
    }
}
struct CourseList *addToCourse(struct CourseList *ls, struct Course s)
{
    struct CourseList *ptr = ls;
    if (!strcmp(s.coursePrereqCode, "NULL") || !strcmp(s.coursePrereqCod
e, "null"))
    {
        printf("\nYou can enroll For  this Prerequisites required this C
ourse!!");
        getch();
    }
```

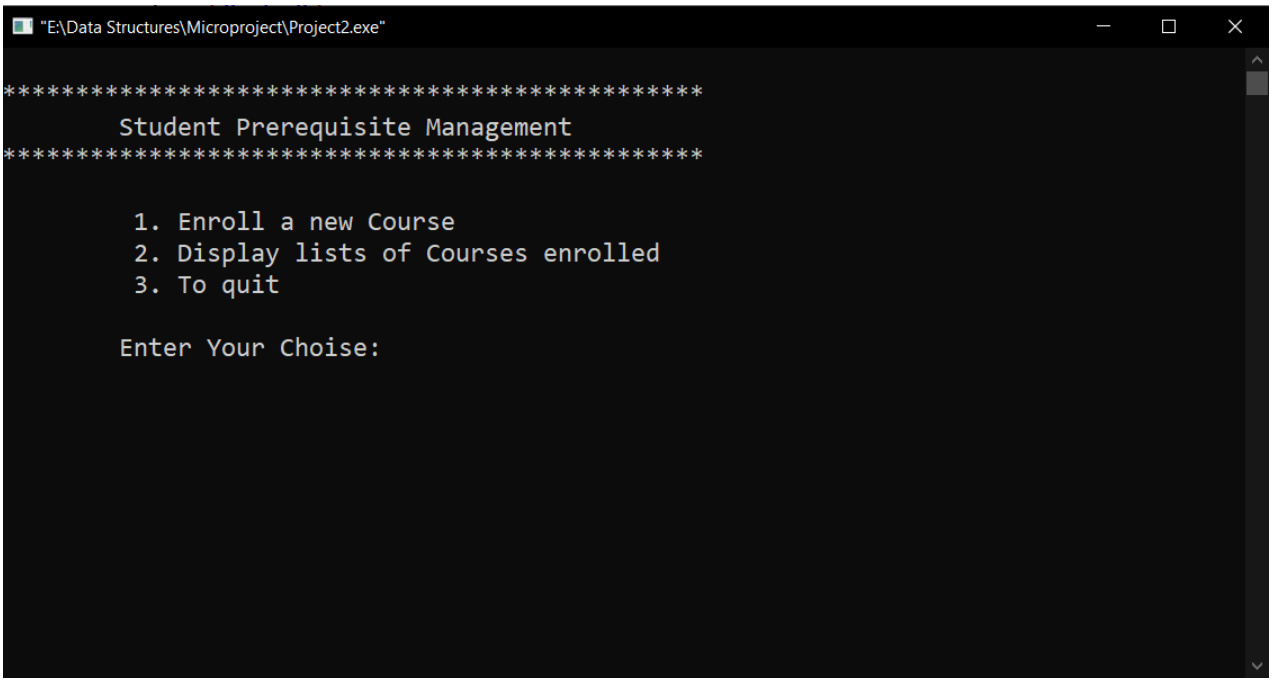
```
    else
    {
        int flag = 0;
        struct CourseList *p = ls;
        while (p != NULL)
        {
            if (strcmp(s.coursePrereqCode, ptr->data.courseCode))
            {
                flag = 0;
            }
            else
            {
                flag = 1;
            }
            p = p->next;
        }
        if (flag == 0)
        {
            printf("\n**You Cannot Enroll For this Course!!You Have Not
Completed the Prerequisites!!");
            getch();
            return ls;
        }
    }
    while (ptr->next != NULL)
    {
        ptr = ptr->next;
    }
    ptr->next = (struct CourseList *)malloc(sizeof(struct CourseList));
    ptr = ptr->next;
    strcpy(ptr->data.courseCode, s.courseCode);
    strcpy(ptr->data.courseName, s.courseName);
    strcpy(ptr->data.coursePrereqCode, s.coursePrereqCode);
    ptr->data.courseCredits = s.courseCredits;
    ptr->next = NULL;
    printf("\nCourse Added Successfully\n");

    return ls;
}
```

```c
struct Course addCourseInfo(struct Course s)
{
    printf("Enter Course Code: ");
    fflush(stdin);
    gets(s.courseCode);
    printf("Enter Course Name: ");
    gets(s.courseName);
    printf("Enter Course Prerequisite(Null For None): ");
    gets(s.coursePrereqCode);
    printf("Enter Course Credit: ");
    scanf("%d", &s.courseCredits);
    return s;
}

int main()
{
    struct Course s;
    s.courseCredits = 0;
    struct CourseList *ls;
    ls = (struct CourseList *)malloc(sizeof(struct CourseList));
    strcpy(ls->data.courseCode, "");
    strcpy(ls->data.courseName, "");
    strcpy(ls->data.coursePrereqCode, "");
    ls->next = NULL;
Menu:
    system("cls");
    printf("\n***********************************************\n");
    printf("\tStudent Prerequisite Management");
    printf("\n***********************************************\n");
    printf("\n\t 1. Enroll a new Course\n");
    printf("\t 2. Display lists of Courses enrolled\n");
    printf("\t 3. To quit\n");
    printf("\n\tEnter Your Choise: ");
    int ch;
    scanf("%d", &ch);

    switch (ch)
    {
    case 1:
```

```
        if (s.courseCredits == 0)
        {
            s = addCourseInfo(s);
            ls->data = s;
            ls->next = NULL;
            printf("Course Added Success Fully!!");
            getch();
        }
        else
        {
            s = addCourseInfo(s);
            ls = addToCourse(ls, s);
            getch();
            printCourseList(ls);
        }
        goto Menu;
    case 2:
        system("cls");
        if (s.courseCredits == 0)
        {
            printf("You Have Not Enrolled For Any Course!!!");
        }
        else
        {
            printf("Your Enrolled Courses Are:\n");
            printCourseList(ls);
            getch();
        }

        goto Menu;

    case 3:

        system("cls");
        printf("Do You Sure Wanna to EXIT>> (Y/N)?: ");
        char e;
        scanf("%s", &e);
        getch();
```

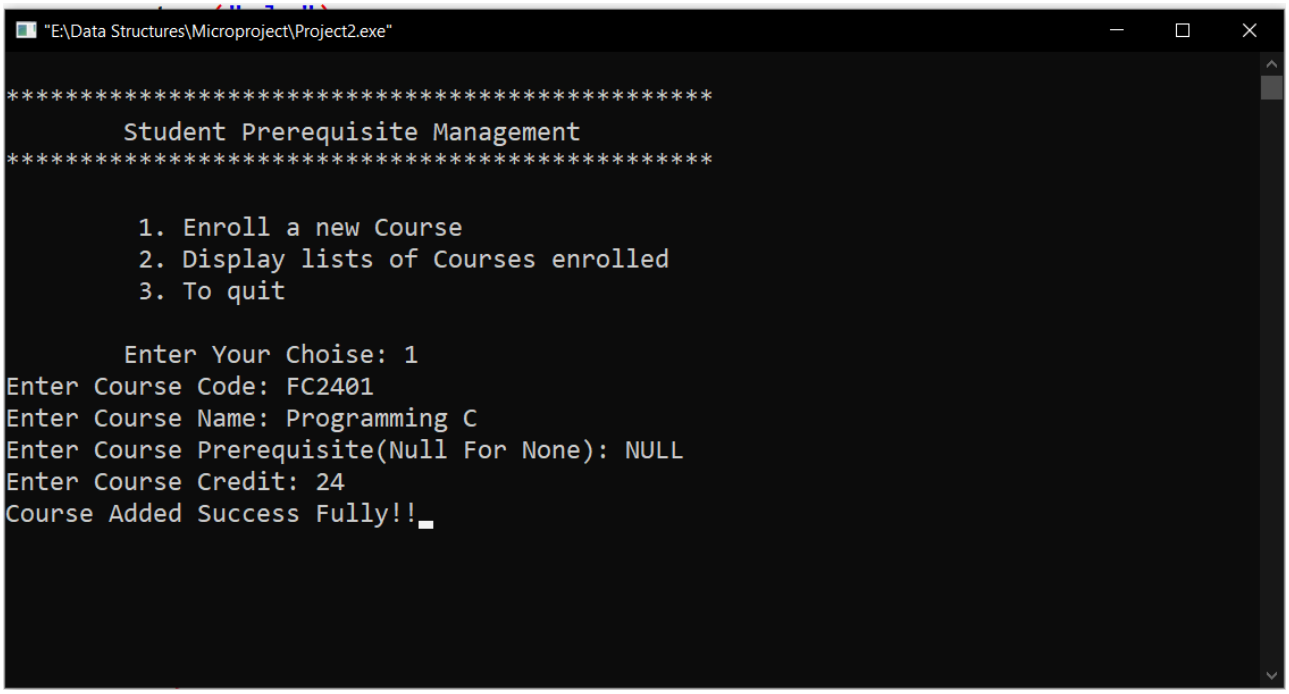
```
        if (e == 'Y' || e == 'y')
            exit(0);
        goto Menu;

    default:
        printf("\nEnter Correct Option!!!\n");
        fflush(stdin);
        getch();
        goto Menu;
    }
    getch();
    return 0;
}
```

Output:



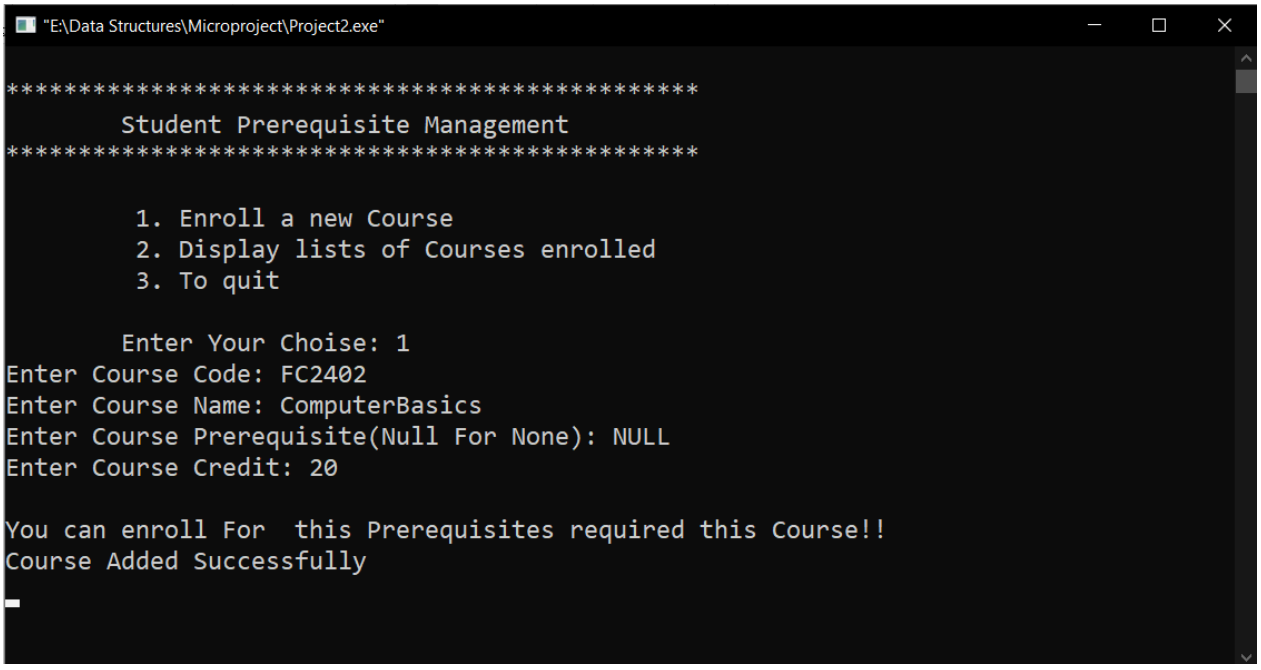
1.1 Main Screen

Main Screen showing Menu From Program.

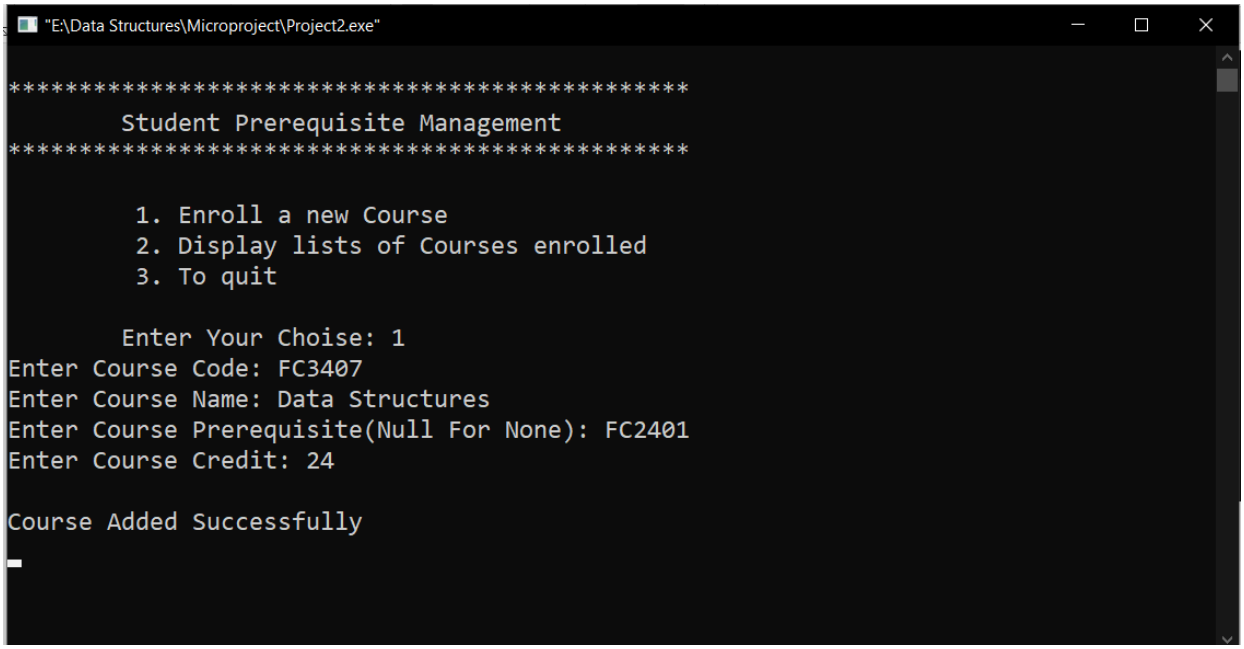


1.1 Adding a Course

Option 1: Enrolling a Course with No Prerequisites.

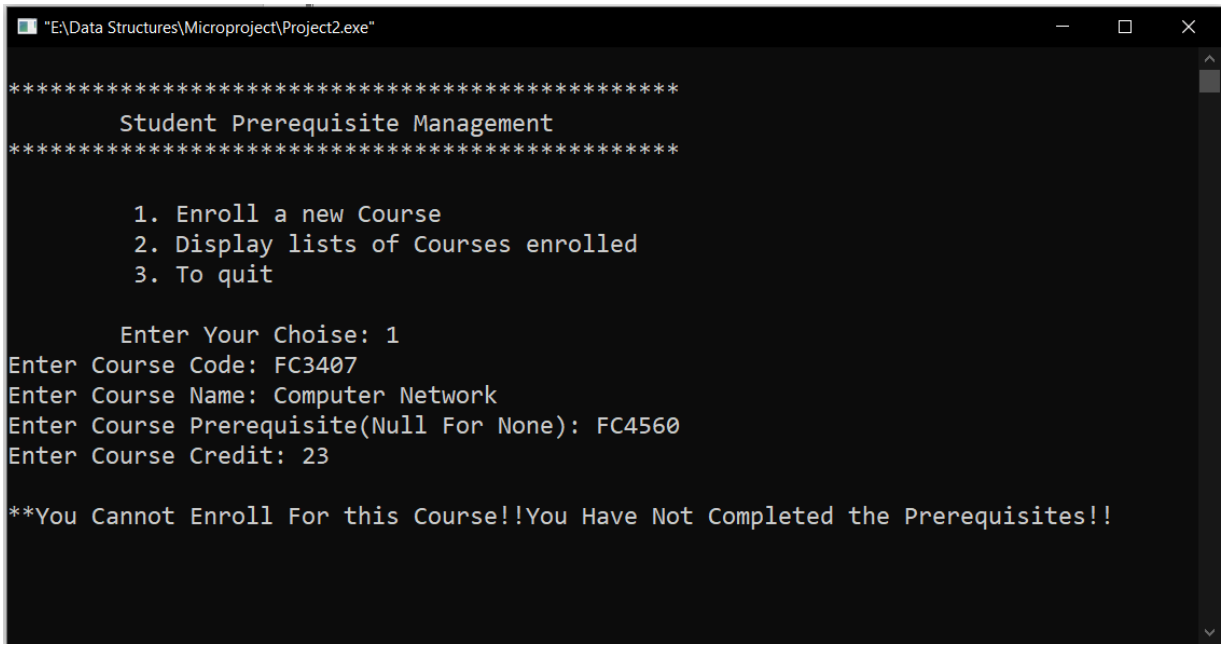


1.2 Adding next Course



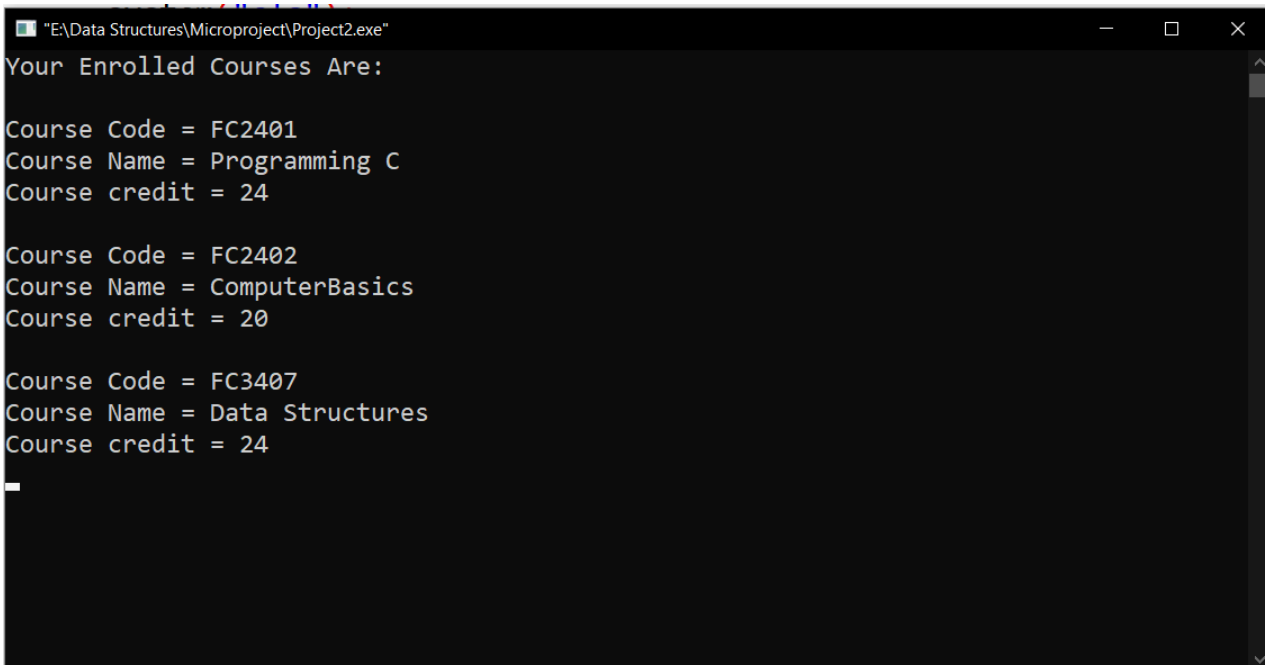
1.3 Adding next Course

Adding Course which needs prerequisite Course – FC2401



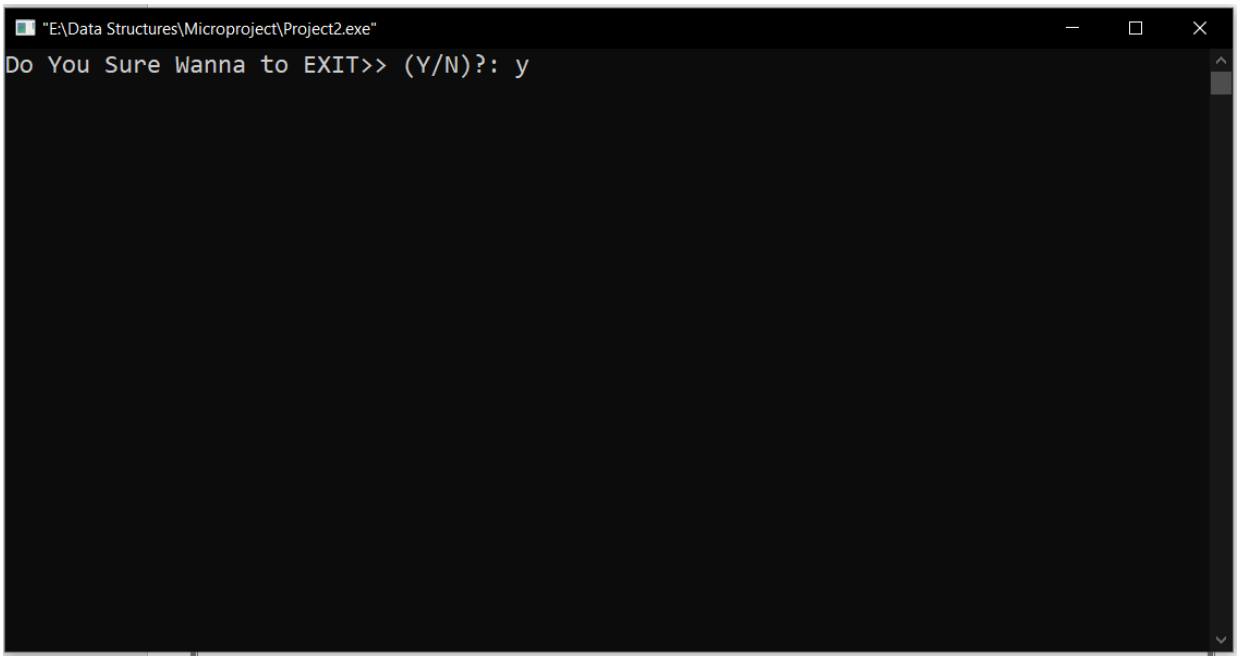
1.4 Adding next Course

Adding Course which prerequisite in not present in student's list will show error.



1.5 Displaying all Enrolled Courses

Option 2: Displays All Enrolled Courses



1.6 Exit Screen

Option 3: To exit the program

****