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Class :- B

ESFP-II

Practical 1:

DMA: Definition: Student Information System.

Lords Universal College, which is situated at Mumbai. College authority decides to come up with a new idea for handling examination section seating arrangements for different-different courses. For that, college wants separate records, those who one is giving a remedial exam for the semester-II. For that, the college wants to take all the information related to students like rollno, name, class, semester, subject, and exam fee. So, whenever is required to search records by id, or by name or by class, he can search randomly and make a proper seating arrangement as per the rules of the examination committee.

So, for the fulfilment of the above said requirement make a proper DMA program using C.

Program Output should be in the following format:

Enter how many records you want to store:3

1001 Sumit Thirteen I ComSci 500

1002 Priya Fourteen II IT 750

1003 Rup fifteen VI Math 500

====================Output of student information===========
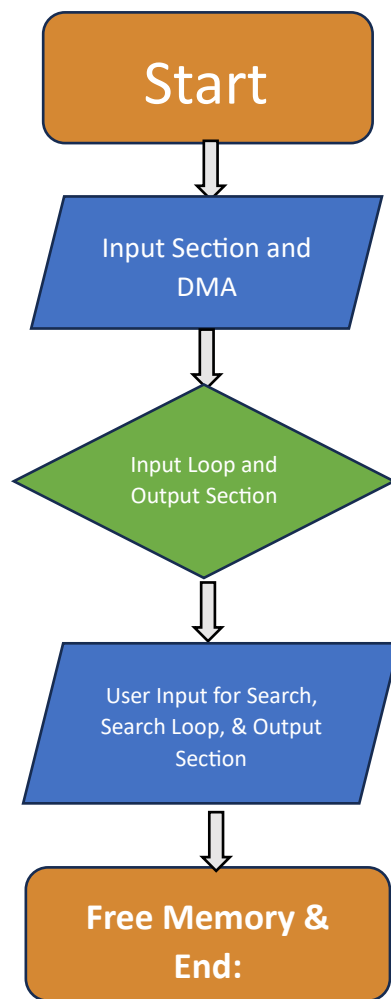
1001 Sumit Thirteen I ComSci 500

1002 Priya Fourteen IIIT IT 750

1003 Rup fifteen VIMath Math 500

Find the student record by name:

Enter student name:Priya

1002 Priya Fourteen IIIT IT 750

```mermaid
Start

Input Section and
DMA

Input Loop and
Output Section

User Input for Search,
Search Loop, & Output
Section

Free Memory &
End:
```

Code:

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

struct Student {
    int rollno;
    char name[50];
    char clas[20];
    char semester[20];
    char subject[50];
    int examFee;
};

int main() {
    int n;
    printf("Enter how many records you want to store: ");
    scanf("%d", &n);

    struct Student *students = (struct Student *)malloc(n * sizeof(struct Student));

    printf("Enter student records (rollno name class semester subject examFee):\n");
    for (int i = 0; i < n; i++) {
        int duplicate = 0;
        do {
            duplicate = 0;
            scanf("%d %s %s %s %s %d", &students[i].rollno, students[i].name, students[i].clas, students[i].semester, students[i].subject, &students[i].examFee);
            for (int j = 0; j < i; j++) {
                if (students[j].rollno == students[i].rollno) {
                    printf("Duplicate ID found! Please enter the information again.\n");
                    duplicate = 1;
                    break;
                }
            }
        } while (duplicate);
    }

    printf("=====================Output of student information============\n");
    for (int i = 0; i < n; i++) {
        printf("%d %s %s %s %s %d\n", students[i].rollno, students[i].name, students[i].clas, students[i].semester, students[i].subject, students[i].examFee);
    }

    int choice;
    printf("Choose search option:\n");
    printf("1. Search by ID\n2. Search by Name\n3. Search by Class\n");
    scanf("%d", &choice);

    switch (choice) {
```

```c
        case 1: {
            int searchId;
            printf("Enter the ID to search: ");
            scanf("%d", &searchId);
            printf("Find the student record by ID:\n");
            for (int i = 0; i < n; i++) {
                if (students[i].rollno == searchId) {
                    printf("%d %s %s %s %s %d\n", students[i].rollno, students[i].name, students[i].clas, students[i].semester, students[i].subject, students[i].examFee);
                    break;
                }
            }
            break;
        }
        case 2: {
            char searchName[50];
            printf("Enter the name to search: ");
            scanf("%s", searchName);
            printf("Find the student record by name:\n");
            for (int i = 0; i < n; i++) {
                if (strcmp(students[i].name, searchName) == 0) {
                    printf("%d %s %s %s %s %d\n", students[i].rollno, students[i].name, students[i].clas, students[i].semester, students[i].subject, students[i].examFee);
                    break;
                }
            }
            break;
        }
        case 3: {
            char searchClass[20];
            printf("Enter the class to search: ");
            scanf("%s", searchClass);
            printf("Find the student record by class:\n");
            for (int i = 0; i < n; i++) {
                if (strcmp(students[i].clas, searchClass) == 0) {
                    printf("%d %s %s %s %s %d\n", students[i].rollno, students[i].name, students[i].clas, students[i].semester, students[i].subject, students[i].examFee);
                }
            }
            break;
        }
        default:
            printf("Invalid choice\n");
    }

    free(students);

    return 0;
}
```

Output:

```
C:\Users\MANAN\OneDrive\[    ×     +    ∨

Enter how many records you want to store: 2
Enter student records (rollno name class semester subject examFee):
101 man fifth I maths 700
101 manan seventh II Science 720
Duplicate ID found! Please enter the information again.
102 Manan Fifth II Science 500
=====================Output of student information============
101 man fifth I maths 700
102 Manan Fifth II Science 500
Choose search option:
1. Search by ID
2. Search by Name
3. Search by Class
1
Enter the ID to search: 102
Find the student record by ID:
102 Manan Fifth II Science 500

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Process exited after 174.2 seconds with return value 0
Press any key to continue . . .
```