

# Student Result Management System in C (Using File Handling)

## Project Overview:

This is a C language project created to manage student results. It takes details and marks of multiple students, calculates total marks, average, grade, checks pass/fail status, assigns rank based on average, and stores the complete result in a file (`record.txt`).

This project follows the file handling approach and meets all the key requirements suggested by the teacher.

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## Features:

- Input details for multiple students
  - Marks entry for 5 subjects
  - Calculates total and average
  - Grade assignment based on average
  - Checks individual subject for pass/fail
  - Rank assignment based on average
  - Saves output in a text file (`record.txt`)
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## Concepts Used:

- `struct` (for storing student data)
- `arrays` (for marks)
- `functions` (for calculating grade, result, rank)

- `file handling` (`fopen`, `fprintf`, `fclose`)
  - `snprintf` for safe string writing
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## File Description:

- **main.c** – Contains the full C source code
  - **record.txt** – Output file that stores all student result data
  - **README.txt** – Project explanation and features
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## Grade Criteria:

Average Score	Grade
90 and above	A
75 – 89	B
60 – 74	C
40 – 59	D
Below 40	F

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## Sample Output in record.txt:

Name	Roll	Total	Average	Grade	Result	Rank
Rajni Kumari	101	453	90.60	A	Pass	1
Neha Kumari	102	445	89.00	B	Pass	2
Jyoti Gupta	103	301	60.20	C	Fail	7
Amisha Raj	104	296	59.20	D	Fail	9
Nandani Pandey	105	337	67.40	C	Fail	4

Aman Kumar	106	268	53.60	D	Fail	10
Raushan Kumar	107	327	65.40	C	Pass	5
Md.Asif	108	423	84.60	B	Pass	3
Harsh Kumar	109	305	61.00	C	Fail	6
Shubham Shastri	110	301	60.20	C	Fail	8

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## How to Compile and Run:

1. Open terminal or use VS Code

Compile the file using:

```
gcc main.c -o result
```

- 2.

Run the program:

```
./result
```

- 3.
4. Check `record.txt` for the result



## Use Cases:

- College/School mini project
  - Resume or academic portfolio
  - Practicing file handling and data structures in C
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## Created By:

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```

#include<stdio.h>
#include<stdlib.h>
#include<string.h>
//To store students data
struct student{
    char name[50];
    int roll;
    int marks[5];
    float average;
    int total;
    char grade;
    char result[10]; //pass or fail.
    int rank;
};

//Function to calculate grade
char calculateGrade(float avg){
    if (avg >= 90) return 'A';
    else if (avg >= 75) return 'B';
    else if (avg >= 60) return 'C';
    else if (avg >= 40) return 'D';
    else return 'F';
}

//Function to calculate pass or fail, Average, and Total
void checkPassFail(struct student *s){
    int pass=1;
    s->total=0;
    for(int i=0; i<5; i++){
        if(s->marks[i]<40){
            pass=0;
        }
        s->total += s->marks[i];
    }
    s->average = s->total / 5.0;
    s->grade = calculateGrade(s->average);
    snprintf(s->result, sizeof(s->result), pass ? "Pass" : "Fail");
}

//Function to give Rank based in average
void assignRanks(struct student s[], int count) {
    for (int i = 0; i < count; i++) {
        s[i].rank = 1;
        for (int j = 0; j < count; j++) {
            if (s[j].average > s[i].average) {
                s[i].rank++;
            }
        }
    }
}

```

```

    }
}

// Search by Roll no.--
void searchByRoll(struct student s[], int count) {
    int r, found = 0;
    printf("\nEnter roll number to search: ");
    scanf("%d", &r);

    for (int i = 0; i < count; i++) {
        if (s[i].roll == r) {
            printf("\n--- Student Found ---\n");
            printf("Name    : %s\n", s[i].name);
            printf("Roll    : %d\n", s[i].roll);
            printf("Total   : %d\n", s[i].total);
            printf("Average: %.2f\n", s[i].average);
            printf("Grade   : %c\n", s[i].grade);
            printf("Result  : %s\n", s[i].result);
            printf("Rank    : %d\n", s[i].rank);
            found = 1;
            break;
        }
    }

    if (!found) {
        printf("Student with roll number %d not found.\n", r);
    }
}

int main() {
    struct student students[100];
    int count;

    printf("Student Management System\n");
    printf("Enter NO. of Students: ");
    scanf("%d", &count);

    for(int i=0; i< count; i++){
        printf("\nStudent %d details:\n", i + 1);
        printf("Enter name: ");
        scanf(" %[^\\n]", students[i].name);

        printf("Enter roll number: ");
        scanf("%d", &students[i].roll);
    }
}

```

```

        for (int j = 0; j < 5; j++) {
            printf("Enter marks for subject %d: ", j + 1);
            scanf("%d", &students[i].marks[j]);
        }
        checkPassFail(&students[i]);
    }
    assignRanks(students, count);

    FILE *file = fopen("record.txt", "w");
    if (file == NULL) {
        printf("File couldn't be opened.\n");
        return 1;
    }

    fprintf(file, "Name\tRoll\tTotal\tAverage\tGrade\tResult\tRank\n");
    for (int i = 0; i < count; i++) {
        fprintf(file, "%s\t%d\t%d\t%.2f\t%c\t%s\t%d\n",
            students[i].name,
            students[i].roll,
            students[i].total,
            students[i].average,
            students[i].grade,
            students[i].result,
            students[i].rank);
    }

    fclose(file);

    printf("\nAll student records saved successfully in 'record.txt'.\n");

    //Search by roll no.--
    char choice;
    do {
        searchByRoll(students, count);
        printf("\nDo you want to search another student? (y/n): ");
        scanf(" %c", &choice);
    } while (choice == 'y' || choice == 'Y');

    return 0;
}

```

## Student Management System

Enter NO. of Students: 10

### Student 1 details:

Enter name: Rajni Kumari

Enter roll number: 101

Enter marks for subject 1: 90

Enter marks for subject 2: 95

Enter marks for subject 3: 85

Enter marks for subject 4: 93

Enter marks for subject 5: 90

### Student 2 details:

Enter name: Neha Kumari

Enter roll number: 102

Enter marks for subject 1: 89

Enter marks for subject 2: 86

Enter marks for subject 3: 90

Enter marks for subject 4: 89

Enter marks for subject 5: 91

### Student 3 details:

Enter name: Jyoti Gupta

Enter roll number: 103

Enter marks for subject 1: 75

Enter marks for subject 2: 64

Enter marks for subject 3: 38

Enter marks for subject 4: 49

Enter marks for subject 5: 75

### Student 4 details:

Enter name: Amisha Raj

Enter roll number: 104

Enter marks for subject 1: 64

Enter marks for subject 2: 82

Enter marks for subject 3: 46

Enter marks for subject 4: 37

Enter marks for subject 5: 67

### Student 5 details:

Enter name: Nandani Pandey

Enter roll number: 105

Enter marks for subject 1: 86

Enter marks for subject 2: 76

Enter marks for subject 3: 91

Enter marks for subject 4: 45

Enter marks for subject 5: 39

Student 6 details:

Enter name: Aman Kumar

Enter roll number: 106

Enter marks for subject 1: 65

Enter marks for subject 2: 48

Enter marks for subject 3: 39

Enter marks for subject 4: 73

Enter marks for subject 5: 43

Student 7 details:

Enter name: Raushan Kumar

Enter roll number: 107

Enter marks for subject 1: 75

Enter marks for subject 2: 43

Enter marks for subject 3: 68

Enter marks for subject 4: 86

Enter marks for subject 5: 55

Student 8 details:

Enter name: Md.Asif

Enter roll number: 108

Enter marks for subject 1: 89

Enter marks for subject 2: 78

Enter marks for subject 3: 92

Enter marks for subject 4: 76

Enter marks for subject 5: 88

Student 9 details:

Enter name: Harsh Kumar

Enter roll number: 109

Enter marks for subject 1: 87

Enter marks for subject 2: 65

Enter marks for subject 3: 75

Enter marks for subject 4: 43

Enter marks for subject 5: 35

Student 10 details:

Enter name: Shubham Shastri

Enter roll number: 110

Enter marks for subject 1: 76

Enter marks for subject 2: 65

Enter marks for subject 3: 45

Enter marks for subject 4: 38

Enter marks for subject 5: 77

All student records saved successfully in 'record.txt'.

Enter roll number to search: 101



--- Student Found ---

Name : Rajni Kumari

Roll : 101

Total : 453

Average: 90.60

Grade : A

Result : Pass

Rank : 1

Do you want to search another student? (y/n):