**A Micro Project Report**

**on**

**Problem Solving using C Language**

Submitted by

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET (AUTONOMOUS)**

**Accredited by NAAC with A+ Grade and NBA under Tier-1**

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**2024-20****25**

**NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET**

**(AUTONOMOUS)**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



**CERTIFICATE**

1. **This is to certify that Changa Aruna,Roll No: 23471A05FG a Second Year Student of the Department of Computer Science and Engineering, has completed the Micro Project Satisfactorily in “Problem Solving using C Language" for the Academic Year 2024-2025.**.

Project Co-Ordinator HEAD OF THE DEPARTMENT

**Mr. M. Venkata Rao, M.Tech. Dr. S. N. Tirumala Rao, M.Tech., Ph.D.**

**Asst. Professor Professor**

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| --- | --- |
| **S.No** | **Description** |
|  | Read Records of n students & display details of Students Having Highest Marks |
|  | Read Records of n Different Students in structure & Sort on the basic of marks in Ascending Order |
|  | Employee Record in Decending Order by Age in structure |
|  | Write a program which to find the grade marks for a student using switch.  The user should enter the class obtained by the student and the number of subjects he has failed in.  ->If the student gets 1st class and the number of subjects he failed in is greater than 3,then he does not get any grade.If the numbers of subjects he failed in is less than or equal to 3 then the grade is of 5 marks per subject.  ->If the student gets 2nd class and the number of subject he failed in is greater than 2, then he does not get any grade is of 4 marks per subject.  ->If the student gets 3rd class and the number of subjects he failed in is greater than 1,then he does not get any grade.If the number of subjects he failed in is equal to 1 then the grade is of 5 marks per subjects. |



AIM:

-Read Records of n students & display details of Students Having Highest Marks

-Read Records of n Different Students in structure & Sort on the basic of marks in Ascending Order

- Employee Record in Decending Order by Age in structure

- Write a program which to find the grade marks for a student using switch.

The user should enter the class obtained by the student and the number of subjects he has failed in.

->If the student gets 1st class and the number of subjects he failed in is greater than 3,then he does not get any grade.If the numbers of subjects he failed in is less than or equal to 3 then the grade is of 5 marks per subject.

->If the student gets 2nd class and the number of subject he failed in is greater than 2, then he does not get any grade is of 4 marks per subject.

->If the student gets 3rd class and the number of subjects he failed in is greater than 1,then he does not get any grade.If the number of subjects he failed in is equal to 1 then the grade is of 5 marks per subjects.

#include <stdio.h>

typedef struct structure

{

char name[200];

float math, phy, che, tel, hin, eng;

float marks;

int age, fail\_count;

} str;

int ctr\_list(str \*s)

{

int count = 0;

if (s->tel <= 35) count++;

if (s->hin <= 35) count++;

if (s->eng <= 35) count++;

if (s->math <= 35) count++;

if (s->phy <= 35) count++;

if (s->che <= 35) count++;

return count;

}

void higher(str s[], int n)

{

int maxIndex = 0;

for (int i = 1; i < n; i++)

{

if (s[i].marks > s[maxIndex].marks)

{

maxIndex = i;

}

}

printf("Student with the highest marks:\n");

printf("Name: %s\n", s[maxIndex].name);

printf("Age: %d\n", s[maxIndex].age);

printf("Telugu: %.2f\n", s[maxIndex].tel);

printf("Hindi: %.2f\n", s[maxIndex].hin);

printf("English: %.2f\n", s[maxIndex].eng);

printf("Maths: %.2f\n", s[maxIndex].math);

printf("Physics: %.2f\n", s[maxIndex].phy);

printf("Chemistry: %.2f\n", s[maxIndex].che);

printf("Marks: %.2f\n\n", s[maxIndex].marks);

}

void sort(str s[], int n)

{

for (int i = 0; i < n - 1; i++)

{

for (int j = 0; j < n - i - 1; j++)

{

if (s[j].marks > s[j + 1].marks)

{

str temp = s[j];

s[j] = s[j + 1];

s[j + 1] = temp;

}

}

}

}

void ageSort(str s[], int n)

{

for (int i = 0; i < n - 1; i++)

{

for (int j = 0; j < n - i - 1; j++)

{

if (s[j].age < s[j + 1].age)

{

str temp = s[j];

s[j] = s[j + 1];

s[j + 1] = temp;

}

}

}

}

void grade(str \*s)

{

if (s->fail\_count >= 3)

{

printf("Student has failed in %d subjects\n", s->fail\_count);

printf("Student grade is 20 based on failed subjects.\n");

}

else if (s->fail\_count == 2)

{

printf("Student has failed in 2 subjects\n");

printf("Student grade is 25 based on failed subjects.\n");

}

else if (s->fail\_count == 1)

{

printf("Student has failed in 1 subject\n");

printf("Student grade is 30 based on failed subjects.\n");

}

else

{

printf("Student has passed all subjects\n");

printf("Congratulations!\n");

}

}

void print(str s[], int n)

{

printf("Displaying Student Information:\n");

for (int i = 0; i < n; i++)

{

printf("Student %d:\n", i + 1);

printf("Name: %s\n", s[i].name);

printf("Age: %d\n", s[i].age);

printf("Telugu: %.2f\n", s[i].tel);

printf("Hindi: %.2f\n", s[i].hin);

printf("English: %.2f\n", s[i].eng);

printf("Maths: %.2f\n", s[i].math);

printf("Physics: %.2f\n", s[i].phy);

printf("Chemistry: %.2f\n", s[i].che);

printf("Marks: %.2f\n", s[i].marks);

printf("Fail Count: %d\n", s[i].fail\_count);

grade(&s[i]); // Call grade for each student

printf("\n");

}

}

int main()

{

int n;

printf("Enter the number of students you want to enter: ");

scanf("%d", &n);

str s[n];

for (int i = 0; i < n; i++)

{

printf("Student %d:\n", i + 1);

printf("Name: ");

scanf("%s", s[i].name);

printf("Age: ");

scanf("%d", &s[i].age);

printf("Telugu: ");

scanf("%f", &s[i].tel);

printf("Hindi: ");

scanf("%f", &s[i].hin);

printf("English: ");

scanf("%f", &s[i].eng);

printf("Maths: ");

scanf("%f", &s[i].math);

printf("Physics: ");

scanf("%f", &s[i].phy);

printf("Chemistry: ");

scanf("%f", &s[i].che);

s[i].fail\_count = ctr\_list(&s[i]);

s[i].marks = s[i].tel + s[i].hin + s[i].eng + s[i].math + s[i].phy + s[i].che;

printf("Total Marks: %.2f\n\n", s[i].marks);

}

printf(".................................................................................................................\n");

printf("After Checking higher Marks students and their marks:\n");

higher(s, n);

printf(".................................................................................................................\n");

printf("Arranging the Students Details in Ascending Order Based on Their Marks:\n");

sort(s, n);

print(s, n);

printf(".................................................................................................................\n");

printf("Arranged in Descending Order Based on Their Age:\n");

ageSort(s, n);

print(s, n);

return 0;

}

Input & Output:

Enter the number of students you want to enter: 3

Student 1:

Name: John

Age: 18

Telugu: 40

Hindi: 50

English: 45

Maths: 65

Physics: 70

Chemistry: 80

Total Marks: 350.00

Student 2:

Name: Sarah

Age: 19

Telugu: 30

Hindi: 25

English: 45

Maths: 40

Physics: 35

Chemistry: 60

Total Marks: 230.00

Student 3:

Name: Alice

Age: 20

Telugu: 75

Hindi: 85

English: 90

Maths: 95

Physics: 92

Chemistry: 88

Total Marks: 525.00

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After Checking higher Marks students and their marks:

Student with the highest marks:

Name: Alice

Age: 20

Telugu: 75.00

Hindi: 85.00

English: 90.00

Maths: 95.00

Physics: 92.00

Chemistry: 88.00

Marks: 525.00

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Arranging the Students Details in Ascending Order Based on Their Marks:

Displaying Student Information:

Student 1:

Name: Sarah

Age: 19

Telugu: 30.00

Hindi: 25.00

English: 45.00

Maths: 40.00

Physics: 35.00

Chemistry: 60.00

Marks: 230.00

Fail Count: 3

Student has failed in 3 subjects

Student grade is 20 based on failed subjects.

Student 2:

Name: John

Age: 18

Telugu: 40.00

Hindi: 50.00

English: 45.00

Maths: 65.00

Physics: 70.00

Chemistry: 80.00

Marks: 350.00

Fail Count: 0

Student has passed all subjects

Congratulations!

Student 3:

Name: Alice

Age: 20

Telugu: 75.00

Hindi: 85.00

English: 90.00

Maths: 95.00

Physics: 92.00

Chemistry: 88.00

Marks: 525.00

Fail Count: 0

Student has passed all subjects

Congratulations!

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Arranged in Descending Order Based on Their Age:

Displaying Student Information:

Student 1:

Name: Alice

Age: 20

Telugu: 75.00

Hindi: 85.00

English: 90.00

Maths: 95.00

Physics: 92.00

Chemistry: 88.00

Marks: 525.00

Fail Count: 0

Student has passed all subjects

Congratulations!

Student 2:

Name: Sarah

Age: 19

Telugu: 30.00

Hindi: 25.00

English: 45.00

Maths: 40.00

Physics: 35.00

Chemistry: 60.00

Marks: 230.00

Fail Count: 3

Student has failed in 3 subjects

Student grade is 20 based on failed subjects.

Student 3:

Name: John

Age: 18

Telugu: 40.00

Hindi: 50.00

English: 45.00

Maths: 65.00

Physics: 70.00

Chemistry: 80.00

Marks: 350.00

Fail Count: 0

Student has passed all subjects

Congratulations!