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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2024-2025

NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that Dosakayalapati Mastanbi Roll No: 23471A0580, 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..

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Records of n Students

AIM:

Read Records of n Students in Structure & Sort on the Basis of Marks in Ascending Order

```
#include <stdio.h>
 struct student
{
   char name[100];
   int roll;
   float marks;
};
int main()
 {
   int n;
   printf("Enter number of students: ");
   scanf("%d", &n);
   struct student students[n];
   for (int i = 0; i < n; i++)
{
       printf("Enter student %d details (name roll marks): ", i + 1);
       scanf("%s %d %f", students[i].name, &students[i].roll,
&students[i].marks);
   }
 struct student tempe;
   for (int i = 0; i < n - 1; i++)
  {
       for (int j = i + 1; j < n; j++)
      {
          if (students[i].marks > students[j].marks)
```

```
            {
            temp = students[i];
                students[i] = students[j];
                students[j] = temp;
            }
        }
    }
    printf("\nsorted student Records by Marks:\n");
      for (int i = 0; i < n; i++)
     {
        printf("Name: %s, Roll: %d, Marks: %.2f\n",
students[i].name, students[i].roll, students[i].marks);
      }

    return 0;
    }
```

INPUT:

Enter number of students:2

Enter students 1 details (name roll marks) : mastanbi 20 88

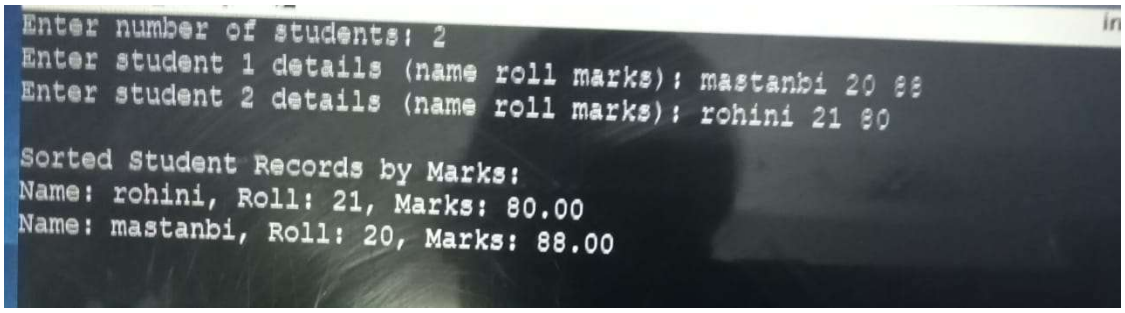
Enter students 2 details (name roll marks) : rohini 21 80

OUTPUT:

Sorted student records by marks:

Name: rohini Roll:21 Marks:80.00

Name: mastanbi Roll:20 Marks:88.00



Employee Records

Aim:

Employee Record in Descending Order by Age in Structure

```
#include<stdio.h>
 struct employee
{
 char name[30];
 int salary;
 int age;
};
 int main()
{
 struct employee e[20], temp;
 int i,j,n;
 printf("Enter n:\n");
 scanf("%d",&n);
 for(i=0;i< n;i++)
 {
  printf("Enter name, salary and age of employee:\n");
  scanf("%s%d%d",e[i].name, &e[i].salary, &e[i].age);
 }
 for(i=0;i< n-1;i++)
 {
  for(j=i+1;j< n;j++)
  {
   if(e[i].age< e[j].age)
   {
    temp = e[i];
    e[i] = e[j];
    e[j] = temp;
   }
```

```
 }
}
printf("Sorted records are:\n");
for(i=0;i< n;i++)
{
 printf("Name: %s\n", e[i].name);
 printf("Salary: %d\n", e[i].salary);
 printf("Age: %d\n\n", e[i].age);
}

return 0;
}
```

INPUT:

Enter n=2

Enter name. salary and age of employee:

mastanbi 8000 25

Enter name. salary and age of employee:

rohini 9000 26

OUTPUT:

Sorted records are:

Name: mastanbi

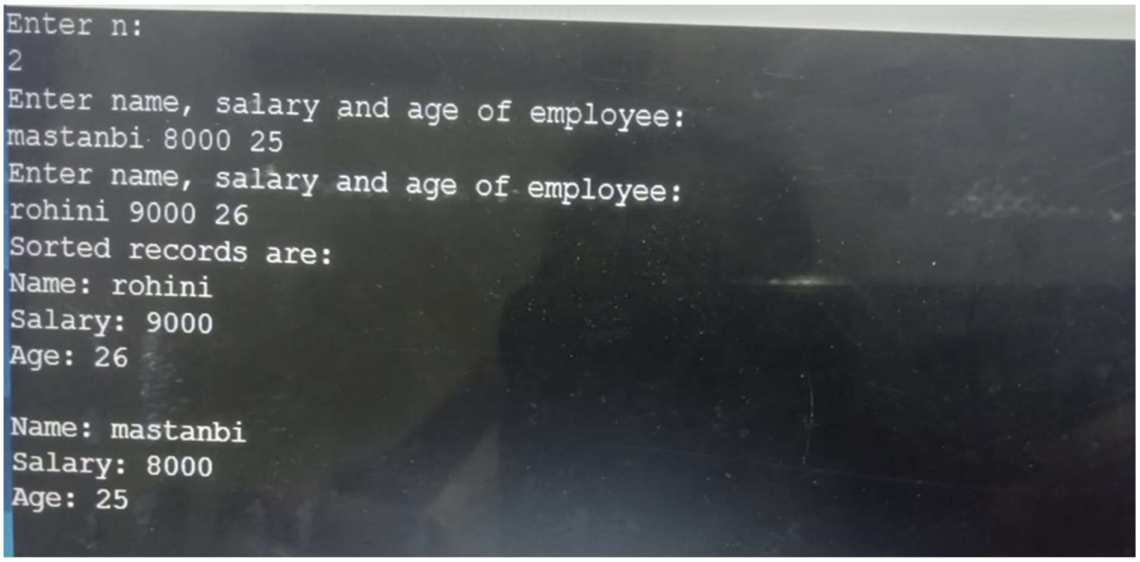
Salary: 8000

Age: 26

Name: rohini

Salary: 9000

Age: 25



Merge Two Arrays

Aim:

C program to Merge Two Arrays

```
#include <stdio.h>
int main()
{
  int n1,n2,n3;
  int a[10000], b[10000], c[20000];
  printf("Enter the size of first array: ");
  scanf("%d",&n1);
  printf("Enter the array elements: ");
  for(int i = 0; i < n1; i++)
    scanf("%d", &a[i]);
  printf("Enter the size of second array: ");
    scanf("%d",&n2);
  printf("Enter the array elements: ");
  for(int i = 0; i < n2; i++)
    scanf("%d", &b[i]);
  n3 = n1 + n2;
  for(int i = 0; i < n1; i++)
```

```
    c[i] = a[i];
  for(int i = 0; i < n2; i++)
     c[i + n1] = b[i];
     printf("The merged array: ");
  for(int i = 0; i < n3; i++)
     printf("%d ", c[i]);
  printf("\nFinal array after sorting: ");
  for(int i = 0; i < n3; i++)
 {
     int temp;
     for(int j = i + 1; j < n3; j++)
    {
        if(c[i] > c[j])
       {
           temp = c[i];
           c[i] = c[j];
           c[j] = temp;
        }
     }
  }
  for(int i = 0; i < n3 ; i++)
     printf(" %d ",c[i]);
  return 0;
}
```

INPUT:

Enter the size of first array: 5

Enter the array elements: 12345

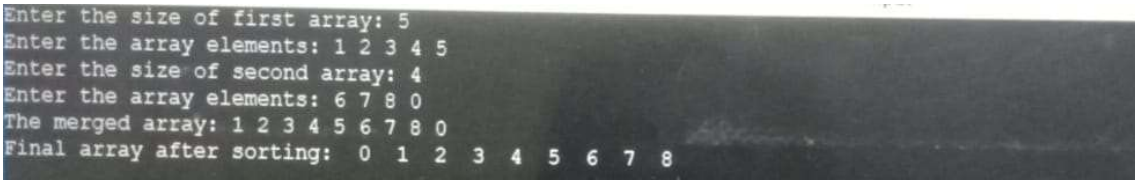
Enter the size of second array: 4

Enter the array elements: 678 0

OUTPUT:

The merged array: 123456780

Final array after sorting: 0 1 2 3 4 5 6 7 8



Perfect Numbers

Aim:

C program to Generate perfect Number in Give Minimum to Maximum Ranges

```
#include <stdio.h>
 int main()
{
   int min, max, i, j, sum;
  printf("Enter minimum value: ");
   scanf("%d", &min);
   printf("Enter maximum value: ");
   scanf("%d", &max);
 printf("Perfect numbers between %d and %d:\n", min, max);
   for (i = min; i <= max; i++)
   {
      sum = 0;
      for (j = 1; j < i; j++)
      {
```

```
            if (i % j == 0)
            {
                sum += j;
            }
        }
        if (sum == i)
        {
            printf("%d\n", i);
        }
    }
    return 0;
}
```

INPUT:

Enter minimum value:1

Enter maximum value: 1000

OUTPUT:

Perfect numbers between 1 and 1000:

6

28

496

Grace Marks of Students

Aim:

Write a program which to find the grace 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 first class and the number of subjects he failed in is greater than 3, then he does not get any grace, If the number of subjects he failed in is less than or equal to 3 then the grace is of 5 marks per subject.

- If the student gets second class and the number of subjects he failed in is

greater than 2, then he does not get any grace. If the number of subjects he

failed in is less than or equal to 2 then the grace is of 4 marks per subject. - If the student gets third class and the number of subjects he failed in is greater than 1, then he

does not get any grace. If the number of subjects he failed in is equal to 1 then the grace is of 5 marks per subject.

```
#include<stdio.h>
#include<conio.h>
int main()
{
   int  grace,n, sub,marks;
  printf("Enter the class obtained by the student: ");
   scanf("%d", &n);
 printf("Enter the number of subject in which he has
failed: ");
  scanf("%d", &sub);
 switch(n)
  {
     case 1:
        if(sub>3)
           grace=0;
        else
            grace=5;
     break;
     case 2:
```

```
            if(sub>2)
                grace =0;
            else
                grace =4;
          break;
        case 3:
            if(sub>1)
                grace = 0;
            else
                grace=5;
          break;
        default:
        printf("invalid input");
      }
      marks= sub* grace;
      printf("the total marks given is %d",marks);
}
```

INPUT:

Enter the class obtained by the student: 1

Enter the number of subject in which he has failed: 2

OUTPUT:

the total marks given is 10