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)

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NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that Veerla Menaka Kumari, Roll No: 23471A05F3, 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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Students records in Ascending order

AIM:

Read Records of n different students in structure and sort on the basis of marks in Ascending order

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

```
for(i=0;i< n;i++)
{
    printf("Name: %s\n", s[i].name);
    printf("Marks: %0.2f\n\n", s[i].marks);
}
return 0;
}
```

Input:

```
Enter n:
5
Enter name and marks of student:
Menaka 40
Srija 35
Ribka 50
Ganga 38
Subbu 42
```

Output :

```
 Sorted records are:

Name: Srija
Marks: 35.00

Name: Ganga
Marks: 38.00

Name: Menaka
Marks: 40.00

Name: Subbu
Marks: 42.00

Name: Ribka
Marks: 50.00
```

Output:

```
Enter n:
5
Enter name and marks of student:
Menaka   40
Srija 35
Ribka 50
Ganga  38
Subbu 42

Sorted records are:

Name: Srija
Marks: 35.00

Name: Ganga
Marks: 38.00

Name: Menaka
Marks: 40.00

Name: Subbu
Marks: 42.00

Name: Ribka
Marks: 50.00
```

Employee records in Descending order

AIM:

Employee Record in descending order by age in structure

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

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

Input:

```
Enter n:
3
Enter employee name,id and age:
Srija 4567 40
Rupa 4568 50
Sujitha 4569 51
```

Output:

```
Sorted records are:

Name: Sujitha
id: 4569
Age: 51

Name: Rupa
id: 4568
Age: 50

Name: Srija
id: 4567
Age: 40
```

Output:

```
Enter n:
3
Enter employee name ,id and age:
Srija  4567  40
Rupa 4568  50
Sujitha  4569  51

Sorted records are:

Name: Sujitha
id: 4569
Age: 51

Name: Rupa
id: 4568
Age: 50

Name: Srija
id: 4567
Age: 40
```

Convert Roman number to decimal number

AIM:

C program to convert Roman number to decimal number

```
#include <stdio.h>
#include<string.h>
int digit(char);
int main()
{
    char romannumber[1000];
    int i=0;
    long int number=0;
    printf("enter any roman  number(valid digits are I,V,X,L,C,D,M):\n");
   scanf("%s",romannumber);
   while(romannumber[i]!='\0')
   {
                    if(digit(romannumber[i])>=digit(romannumber[i+1]))
                   {
                            number=number+digit(romannumber[i]);

                    }
    else
    {
          number=number+(digit(romannumber[i+1])-digit(romannumber[i]));
          i++;

     }
         i++;

   }
   printf("its decimal value is:%ld",number);
   return 0;
```

```
}
int digit(char c)
{
   int value=0;
   switch(c)
   {
      case 'I':value=1;
      break;
      case 'V':value=5;
      break;
      case 'X':value=10;
      break;
      case 'L':value=50;
      break;
      case 'C':value=100;
      break;
      case 'D':value=500;
      break;
      case 'M':value=1000;
      break;
      case '\0':value=0;
      break;
      default: value=-1;

   }
   return value;

}
```

Input:

enter any roman number (valid digits are I,V,X,L,C,D,M):
XIII

Output:

its decimal value is:13

Output:

```
enter any roman number(valid digits are I,V,X,L,C,D,M):
XIII
its decimal value is:13
```

Matchstick game between the Computer and User

AIM:

write a program for a matchstick game being played between the computer and a user. Your program should ensure that the computer always wins.
Rules for the game are as follows:

- **There are 21 matchsticks.**
- **The computer asks the player to pick 1,2,3 or 4 matchsticks**
- **After the person picks, the computer does its picking**
- **Whoever is forced to pick up the last matchstick loses the game**

```
#include<stdio.h>
int main()
{
    int m=21,p,c;
    while(m>1)
    {
        printf("no of match sticks left=%d\n",m);
        printf("pick 1 or 2 or 3 or 4 matches\n");
        scanf("%d",&p);
        if(p>=1||p<=4)
        {
            m=m-p;
            printf("no of match sticks left after person picked=%d\n",m);
           if(m==1)
           {
               printf("person lost game");
               break;
            }
        }
       c=5-p;
       printf("out of computer picked %d\n",c);
       m=m-c;
       printf("no of match sticks left after computer picked=%d\n",m);
      if(m==1)
      {
          printf("computer wins game");
```

```
            break;
        }
    }
return 0;
}
```

Input:
no of match sticks left=21
pick 1 or 2 or 3 or 4 matches
3
Output:
no of match sticks left after person picked=18
out of computer picked 2
no of match sticks left after computer picked=16
Input:
no of match sticks left=16
pick 1 or 2 or 3 or 4 matches
4
Output:
no of match sticks left after person picked=12
out of computer picked 1
no of match sticks left after computer picked=11
Input:
no of match sticks left=11
pick 1 or 2 or 3 or 4 matches
2
Output:
no of match sticks left after person picked=9
out of computer picked 3
no of match sticks left after computer picked=6
Input:
no of match sticks left=6
pick 1 or 2 or 3 or 4 matches
3
Output:
no of match sticks left after person picked=3
out of computer picked 2
no of match sticks left after computer picked=1
computer wins game

Output:

```
no of match sticks left=21
pick 1 or 2 or 3 or 4 matches
3

no of match sticks left after person picked=18
out of computer picked 2
no of match sticks left after computer picked=16

no of match sticks left=16
pick 1 or 2 or 3 or 4 matches
4

no of match sticks left after person picked=12
out of computer picked 1
no of match sticks left after computer picked=11

no of match sticks left=11
pick 1 or 2 or 3 or 4 matches
2

no of match sticks left after person picked=9
out of computer picked 3
no of match sticks left after computer picked=6

no of match sticks left=6
pick 1 or 2 or 3 or 4 matches
3

no of match sticks left after person picked=3
out of computer picked 2
no of match sticks left after computer picked=1
computer wins game
```