**A Micro Project Report**

**on**

**Problem Solving using C Language**

Submitted by

#### Veerla Menaka Kumari (23471A05F3)



**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

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

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

**NIRF rank in the band of 201-300 and is an ISO 9001:2015 certified Approved by AICTE, New Delhi, Permanently affiliated to JNTU Kakinada, Approved by AICTE, Accredited by NBA and accredited ’A+’ grade by NAAC Narasaraopet-522601, Palnadu(Dt.), Andhra Pradesh, India**

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

**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.**.

Project Co-Ordinator HEAD OF THE DEPARTMENT

**Dr. Rama Krishna. Eluri, M.Tech., Ph.D. Dr. S. N. Tirumala Rao, M.Tech.,  Asst. Professor Ph.D. Professor**

**INDEX**

|  |  |
| --- | --- |
| **S.No** | **Description** |
|  | Read Records of n different students in structure and sort on the basis of marks in Ascending order |
|  | Employee Record in descending order by age in structure |
|  | C program to convert Roman number to decimal number |
|  | 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 |



**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**

**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



**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:**

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

XIII

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 gam

**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