A Micro Project Report

on

Problem Solving using C Language

Submitted by

Shaik Sheema (23471A05EP)

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

2024-2025

NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET

(AUTONOMOUS)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that **Shaik Sheema**, **Roll No: 23471A05EP**, 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

Dr. Rama Krishna. Eluri, M.Tech., Ph.D.
Asst. Professor

HEAD OF THE DEPARTMENT

Dr. S. N. Tirumala Rao, M.Tech., Ph.D.
Professor

Index

S.No	Description
1.	C Program to Given a string, consisting of alphabets and digits, find the frequency of each digit in the given string.
2.	C program given a sentence, print each word of the sentence in a new line.
3.	You are given triangles, specifically, their sides, and print them in the same style but sorted by their areas from the smallest one to the largest one. It is guaranteed that all the areas are different.
4.	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.

Frequency Count of Digits in String

AIM:

Write a C program to given a string, consisting of alphabets and digits, find the frequency of each digit in the given string.

Source code:-

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
void main()
{
int
i=0,z=0,one=0,two=0,three=0,four=0,five=0,six=0,seven=0,eight=0,nine=0,
i=0;
char str[100];
printf("enter the string \n");
fgets(str,sizeof(str),stdin);
for(i=0;str[i]!='\0';i++)
{
      if(str[i]==48)
          z++;
     else if(str[i]==49)
         one++;
    else if(str[i]==50)
        two++;
    else if(str[i]==51)
      three++;
    else if(str[i]==52)
      four++;
    else if(str[i]==53)
      five++;
    else if(str[i]==54)
```

```
        six++;
      else if(str[i]==55)
        seven++;
      else if(str[i]==56)
        eight++;
      else if(str[i]==57)
       nine++;
}
printf("%d%d%d%d%d%d%d%d%d%d",z,one,two,three,four,five,six,seven,
eight,nine);
getch();
}
```

Input:

Enter the string
hi0112233hjko335678889

Output:

1224011131

```
enter the string
hi0112233hjko335678889
1224011131
```

Each word in a new line

AIM:

Write a C Program Given a sentence, print each word of the sentence in a new line.

Source code:-

```
#include<stdio.h>
#include<string.h>
#include<conio.h>
void main()
 {
  char str[1000];
  int i;
 printf("Enter a sentence:");
 fgets(str,sizeof(str),stdin);
 for(i=0;str[i]!='\0';i++)
 {
  printf("%c",str[i]);
 if(str[i]==' ')
 {
   printf("\n");
  }
 }
 getch();
 }
```

Input:

Enter a sentence: Good Morning friend

Output:-

Good

Morning

friend

```
Enter a sentence: Good Morning friend

Good
Morning
friend
```

Areas Of Triangle In Sorted Order

AIM:

Write a c program that you are given triangles, specifically, their sides, and print them in the same style but sorted by their areas from the smallest one to the largest one.it is guaranteed that all the areas are different.

Source code:-

```
#include <stdio.h>
#include <math.h>
int main()
 {
    int n, i, j;
    scanf("%d", &n);
    double sides[n][3], areas[n];
    for(i = 0; i < n; i++)
{
        scanf("%lf %lf %lf", &sides[i][0], &sides[i][1], &sides[i][2]);
        double s = (sides[i][0] + sides[i][1] + sides[i][2]) / 2;
        areas[i] = sqrt(s * (s - sides[i][0]) * (s - sides[i][1]) * (s - sides[i][2]));
    }
    for(i = 0; i < n; i++)
        for(j = i + 1; j < n; j++)
            if(areas[i] > areas[j])
            {
              double temp_area = areas[i];
```

```
 areas[i] = areas[j];
 areas[j] = temp_area;
 for(int k = 0; k < 3; k++)
{
    double temp_side = sides[i][k];
            sides[i][k] = sides[j][k];
            sides[j][k] = temp_side;
          }
        }
   for(i = 0; i < n; i++)
      printf("Triangle %d: %.2lf %.2lf %.2lf Area: %.2lf\n", i + 1, sides[i][0],
sides[i][1], sides[i][2], areas[i]);
      return 0;
}
```

Input:

3

1 5 6

7 5 3

5 9 8

Output:-

Triangle 1: 1.00 5.00 6.00 Area: 0.00

Triangle 2: 7.00 5.00 6.00 Area: 6.50

Triangle 3: 5.00 9.00 8.00 Area: 19.90

```
3
1 5 6
7 5 3
5 9 8
Triangle 1: 1.00 5.00 6.00 Area: 0.00
Triangle 2: 7.00 5.00 3.00 Area: 6.50
Triangle 3: 5.00 9.00 8.00 Area: 19.90
```

Matchstick Game

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.

Source code:-

```
#include<stdio.h>
#include<conio.h>
int main()
{
 int m=21,p,c;
 clrscr();
 while(m>1)
 {
printf("No.of matchsticks left: %d\n",m);
printf("pick 1(or)2(or)3(or)4 matchsticks\n");
scanf("%d",&p);
if(p<=4||p>=1)
m=m-p;
```

```
printf("no.of matchsticks left: %d\n",m);
c=5-p;
printf("out of them computer pick:%d\n",c);
m=m-c;
}
if(m<=1)
{
printf("no.of matchsticks left:%d\n",m);
printf("you lost and computer won the match");
}
return 0;
}
```

Input:

No.of matchsticks left: 21

pick 1(or)2(or)3(or)4 matchsticks

Output:-

no.of matchsticks left: 17

out of them computer pick:1

No.of matchsticks left: 16

pick 1(or)2(or)3(or)4 matchsticks

3

no.of matchsticks left: 13

out of them computer pick:2

No.of matchsticks left: 11

pick 1(or)2(or)3(or)4 matchsticks

2

no.of matchsticks left: 9

out of them computer pick:3

No.of matchsticks left: 6

pick 1(or)2(or)3(or)4 matchsticks

3

no.of matchsticks left: 3

out of them computer pick:2

no.of matchsticks left:1

you lost and computer won the match

```
No.of matchsticks left: 21
pick 1(or)2(or)3(or)4 matchsticks
4
no.of matchsticks left: 17
out of them computer pick:1
No.of matchsticks left: 16
pick 1(or)2(or)3(or)4 matchsticks
3
no.of matchsticks left: 13
out of them computer pick:2
No.of matchsticks left: 11
pick 1(or)2(or)3(or)4 matchsticks
2
no.of matchsticks left: 9
out of them computer pick:3
No.of matchsticks left: 6
pick 1(or)2(or)3(or)4 matchsticks
3
no.of matchsticks left: 3
out of them computer pick:2
no.of matchsticks left:1
you lost and computer won the match
```