

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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Palnadu(Dt.), Andhra Pradesh, India**

2024-2025

NARASARAOPETA ENGINEERING COLLEGE: NARASARAOPET
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CERTIFICATE

This is to certify that **Meesala Sumanjali** , Roll No: **23471A05E4**, 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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1.	Read two rational numbers (a/b form) from the keyboard do the following Operations with the help of structures i.Addition of two rational numbers ii. Subtraction of two rational numbers iii. Multiplication of two rational numbers iv. Division of two rational numbers
2.	There is a structure called employee that holds information like employee code, name, date of joining. Write a program to create an array of the structure and enter some data into it. Then ask the user to enter current date. Display the names of those employees whose tenure is 3 or more than 3 years according to the given current date.

Operations on two rational numbers using structures

AIM:

Read two rational numbers (a/b form) from the keyboard do the following

operations with the help of structures

- i. Addition of two rational number
- ii. Subtraction of two rational numbers
- iii. Multiplication of two rational numbers
- iv. Division of two rational numbers

```
#include <stdio.h>
```

```
struct Rational
```

```
{
```

```
    int numerator;
```

```
    int denominator;
```

```
};
```

```
int gcd(int a, int b)
```

```
{
```

```
    while (b != 0)
```

```
    {
```

```
        int temp = b;
```

```
        b = a % b
```

```

    a = temp;
}
return a;
}
struct Rational simplify(struct Rational r)
{
    int commonDivisor = gcd(r.numerator, r.denominator);
    r.numerator /= commonDivisor;
    r.denominator /= commonDivisor;
    if (r.denominator < 0)
    {
        r.numerator = -r.numerator;
        r.denominator = -r.denominator;
    }
    return r;
}
struct Rational add(struct Rational r1, struct Rational r2)
{
    struct Rational result;
    result.numerator = r1.numerator * r2.denominator + r2.numerator *
r1.denominator;
    result.denominator = r1.denominator * r2.denominator;
    return simplify(result);
}
struct Rational subtract(struct Rational r1, struct Rational r2)
{
    struct Rational result;

```

```

    result.numerator = r1.numerator * r2.denominator - r2.numerator *
r1.denominator;
    result.denominator = r1.denominator * r2.denominator;
    return simplify(result);
}
struct Rational multiply(struct Rational r1, struct Rational r2)
{
    struct Rational result;
    result.numerator = r1.numerator * r2.numerator;
    result.denominator = r1.denominator * r2.denominator;
    return simplify(result);
}
struct Rational divide(struct Rational r1, struct Rational r2)
{
    struct Rational result;
    result.numerator = r1.numerator * r2.denominator;
    result.denominator = r1.denominator * r2.numerator;
    return simplify(result);
}
void display(struct Rational r)
{
    if (r.denominator == 1)
    {
        printf("%d\n", r.numerator);
    }
    else
    {

```

```
        printf("%d/%d\n", r.numerator, r.denominator);
    }
}

int main()
{
    struct Rational r1, r2;
    printf("Enter the first rational number (a/b): ");
    scanf("%d/%d", &r1.numerator, &r1.denominator);
    printf("Enter the second rational number (a/b): ");
    scanf("%d/%d", &r2.numerator, &r2.denominator);
    if (r1.denominator == 0 || r2.denominator == 0)
    {
        printf("Error: Denominator cannot be zero.\n");
        return 1;
    }

    struct Rational sum = add(r1, r2);
    printf("Sum: ");
    display(sum);

    struct Rational difference = subtract(r1, r2);
    printf("Difference: ");
    display(difference);

    struct Rational product = multiply(r1, r2);
    printf("Product: ");
    display(product);
```

```
if (r2.numerator != 0)
{
    struct Rational quotient = divide(r1, r2);
    printf("Quotient: ");
    display(quotient);
}
else
{
    printf("Error: Division by zero is not allowed.\n");
}

return 0;
}
```


Input:

Enter the first rational number (a/b):2/3

Enter the second rational number (a/b):4/5

Output:

Sum: 22/15

Difference: -2/15

Product: 8/15

Quotient: 5/6

```
Enter first rational number(a/b):2/3
Enter second rational number(a/b):4/5
Sum: 22/15
Difference: -2/15
Product: 8/15
Quotient: 5/6
```

Employees details using structures

2. There is a structure called employee that holds information like employee code, name, date of joining. Write a program to create an array of the structure and enter some data into it. Then ask the user to enter current date. Display the names of those employees whose tenure is 3 or more than 3 years according to the given current date.

```
#include<stdio.h>
#include<conio.h>
#include<string.h>
struct employee{
int code;
char name[100];
int date;
int month;
int year;
int tenure;
};
void main()
{
    struct employee e[3];
    int i,pd,pm,py,totalmonth;
    clrscr();
    printf("enter employee details;\n");
    for(i=1;i<=3;i++)
    {
```

```
        printf("employee %d details:\n",i);
        printf("code: ");
        scanf("%d",&e[i].code);
        printf("Name:");
        scanf("%s",e[i].name);
        printf("joining date:");
        scanf("%d %d %d",&e[i].date, &e[i].month, &e[i].year);
    }

    printf("enter present year:");
    scanf("%d%d%d",&pd,&pm,&py);
    printf("the persons whose tenure is more than 3 years
are..\n");

    for(i=1;i<=3;i++)
    {
        totalmonth=(py-e[i].year)*12;
        e[i].tenure=(pm-e[i].month)+totalmonth;
        if(e[i].tenure>=36)
            printf("%s\n",e[i].name);
    }
    getch();
}
```

Input:

enter employees details:

employee 1 details:

code: 201

Name: suma

Joining date: 12 10 2004

employee 2 details:

code:202

Name:Zahara

Joining date:10 5 2004

employee 3 details:

code:203

Name:Ameena

Joining date: 13 6 2005

enter present year: 16 5 2007

Output:

the persons whose tenure is more than 3 years are..

Zahara

```
enter employees details;
employee 1 details:
code: 201
Name: suma
joining date: 12 10 2004
employee 2 details:
code: 202
Name: zahara
joining date: 10 5 2004
employee 3 details:
code: 203
Name: Ameena
joining date: 13 6 2005
enter present year:16 5 2007
the persons whose tenure is more than 3 years are..
zahara
```