

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

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CERTIFICATE

This is to certify that **Kotha Lakshmi Pujitha**, **Roll No: 23471A05C8**, 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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2.	<p>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.</p>

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;  
}
```

Output:

```
Enter the first rational number (a/b): 4/9  
Enter the second rational number (a/b): 3/20  
Sum: 107/180  
Difference: 53/180  
Product: 1/15  
Quotient: 80/27
```


Employees details using structures

AIM:

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();

}
```

Output:

```
enter employee details;
employee 1 details:
code: 123
Name:puji
joining date:1 5 2002
employee 2 details:
code: 678
Name:vyshu
joining date:15 2 2002
employee 3 details:
code: 459
Name:priya
joining date:25 6 2004
enter present year:18 2 2005
the persons whose tenure is more than 3 years
are..
vyshu
```