

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.



C PROGRAMMING LAB RECORD

Submitted by

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Under the Guidance of

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in partial fulfillment for the award of the degree of

BACHELOR OF ENGINEERING

in

COMPUTER SCIENCE AND ENGINEERING



B.M.S. COLLEGE OF ENGINEERING

(Autonomous Institution under VTU)

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B.M.S. COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Akash M



DECLARATION

I, Akash M student of 2nd Semester, B.E, Department of Computer Science and Engineering, B. M. S. College of Engineering, Bangalore, hereby declare that, this laboratory work for "C Programming" course has been carried out by us under the guidance of Prof. Rekha G S ,Assistant Professor, Department of CSE, B. M. S. College of Engineering, Bangalore during the academic semester April-2021-June-2021

We also declare that to the best of our knowledge and belief, the development reported here is not from part of any other report by any other students.

Akash M(1BM20CS006)

Akash.M

Program 1

//1.Develop a C program to convert degrees Fahrenheit into degrees celsius.

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

```
int main(){
```

```
    float fahrenheit;
```

```
    float celsius;
```

```
    printf("Enter the temperature in degree Fahrenheit\n");
```

```
    scanf("%f",&fahrenheit);
```

```
    celsius=((fahrenheit-32)*5)/9;
```

```
    printf("Temperature in Celsius :\t %0.2f",celsius);
```

```
    return 0;
```

```
}
```

Output of 1st program:

Enter the temperature in degree Fahrenheit

98

Temperature in Celsius : 36.67%

Program 2

//2. Develop a C program to find the area of a triangle given its sides as input using functions.

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

```
#include <math.h>
```

```
int areacalculate(int a,int b,int c)
```

```
{
```

```
    float s , area , s1;
```

```
    s1=a+b+c;
```

```
    s = s1/2;
```

```
    area = sqrt(s*(s-a)*(s-b)*(s-c));
```

```
    printf("Area of Triangle of given sides is %0.2f",area);
```

```
    return 0;
```

```
}
```

```
int main(){
```

```
    int a1,b1,c1;
```

```
    printf("Enter three side of triangle\n");
```

```
    scanf("%d %d %d",&a1,&b1,&c1);
```

```
    areacalculate(a1,b1,c1);
```

```
    return 0;
```

```
}
```

Output of 2nd Program:

Enter three side of triangle

2 3 4

Area of Triangle of given sides is 2.90%

Program 3

```
//3. Develop a C program to find all possible roots of a quadratic
equation.
#include<stdio.h>
#include<math.h>
int roots(int a, int b,int c)
{
    float d,r1,r2,img;
    d=(b*b)-(4*a*c);
    if(d>0){
        r1=(-b + sqrt(d))/(2*a);
        r2=(-b - sqrt(d))/(2*a);
        printf("Roots are real and distinct %0.2f,%0.2f",r1,r1);
    }
    else if(d==0){
        r1 = ((-b)/(2*a));
        printf("Roots are real and equal %0.2f,%0.2f",r1,r1);
    }
    else if(d<0){
        r1=(-b)/(2*a);
        img= sqrt(-d)/(2*a);
        printf("Roots are imaginary and distinct %0.2f + %0.2fi ,
%0.2f - %0.2fi",r1,img,r1,img);
    }
    return 0;
}
int main()
{
    int a,b,c;
    printf("Enter the values of a,b,c");
    scanf("%d %d %d",&a,&b,&c);
    roots(a,b,c);
}
```

Output of 3rd program:

```
[(base) akashm@Akashs-MacBook-Pro Lab4 % ./quad  
Enter the values of a,b,c 1 2 3  
Roots are imaginary and distinct -1.00 + 1.41i , -1.00 - 1.41i%  
(base) akashm@Akashs-MacBook-Pro Lab4 % █
```


Program 4

/*4.Develop a C program to determine whether the entered character is a vowel or consonant using switch case statement.*/

```
#include<stdio.h>
int vowel(char c)
{
    switch(c)
    {
        case 'A':
        case 'E':
        case 'I':
        case 'O':
        case 'U':
        case 'a':
        case 'e':
        case 'i':
        case 'o':
        case 'u':
            printf("Entered Character is Vowel");
            break;
        default:
            printf("Entered character is Consonent");
            break;
    }
    return 0;
}
int main()
{
    char c;
    printf("Enter the alphabets to be verified \n");
    scanf("%c",&c);
    vowel(c);
    return 0;
}
```

Output of 4th program:

```
Enter the alphabets to be verified
b
Entered character is Consonent%
(base) akashm@Akashs-MacBook-Pro Lab5 %
```

Program 5

//5.Develop a C program to print even numbers from M to N.

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

```
int evenr(int m,int n)
```

```
{
```

```
    int i;
```

```
    printf("Even Numbers from range %d-%d is: \n",m,n);
```

```
    if(m%2!=0)
```

```
    {
```

```
        m=2*m;
```

```
    }
```

```
    for(i=m;i<=n;i=i+2)
```

```
    {
```

```
        printf("%d",i);
```

```
        printf("\n");
```

```
    }
```

```
    return 0;
```

```
}
```

```
int main()
```

```
{
```

```
    int m,n;
```

```
    printf("Enter the Range M-N to print even numbers\n");
```

```
    scanf("%d %d",&m,&n);
```

```
    evenr(m,n);
```

```
    return 0;
```

```
}
```

Output of 5th program:

Enter the Range M-N to print even numbers

1 10

Even Numbers from range 1-10 is:

2

4

6

8

10

(base) akashm@Akashs-MacBook-Pro Lab5 %

Program 6

//6.Develop a program to calculate the sum of squares of first n odd numbers.

```
#include<stdio.h>
int square(int a)
{
    return (a*a);
}
int squareodd(int n)
{
    int sumo=0;
    for(int i=1;i<=2*n;i++)
    {
        if(i%2!=0)
        {
            sumo=sumo+square(i);
        }
    }
    return sumo;
}
int main()
{
    int n,sumo;
    printf("Enter the value of N for which squares to be calculated");
    scanf("%d",&n);
    sumo=squareodd(n);
    printf("Sum of squares of first  %d odd numbers :%d ",n,sumo);
    return 0;
}
```

Output of 6th program:

```
-----  
[base) akashm@Akashs-MacBook-Pro Lab6 % ./sumofodd  
Enter the value of N for which squares to be calculated6  
Sum of squares of first 6 odd numbers :286 %  
(base) akashm@Akashs-MacBook-Pro Lab6 % █
```

Program 7

//7.Develop a program to perform addition of two Matrices.

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int mat1[10][10],mat2[10][10],mat3[10][10]={0},n1,m1,n2,m2,n3,m3;
    printf("Enter number of Rows in 1st matrix\n");
    scanf("%d",&n1);
    printf("Enter Number of columns in 1st matrix\n");
    scanf("%d",&m1);
    printf("Enter number of Rows in 2nd matrix\n");
    scanf("%d",&n2);
    printf("Enter Number of columns in 2nd matrix\n");
    scanf("%d",&m2);
    if(n1!=n2 && m1!=m2)
    {
        printf("Enter correct number of rows and columns");
        exit(0);
    }
    printf("Enter the elements of the matrix1\n");
    for(int i=0;i<n1;i++)
    {
        for(int j=0;j<m1;j++)
        {
            scanf("%d",&mat1[i][j]);
        }
    }
    printf("Enter the elements of the matrix2\n");
    for(int i=0;i<n2;i++)
    {
        for(int j=0;j<m2;j++)
        {
            scanf("%d",&mat2[i][j]);
        }
    }
    if(n1==n2 && m1==m2)
    {
        n3=n1;
        m3=m1;
        for(int i=0;i<n3;i++)
        {
            for(int j=0;j<m3;j++)
            {
                mat3[i][j]=mat1[i][j]+mat2[i][j];
            }
        }
        printf("Matrices sum is \n");
        for(int i=0;i<n3;i++)
        {
            printf("\n");
            for(int j=0;j<m3;j++)
            {
                printf("%d\t",mat3[i][j]);
            }
        }
    }
    return 0;
}
```

Output of 7th program:

```
9
10
11
13
14
Enter the elements of the matrix2
2
3
4
5
6
7
8
9
10
11
13
14
Matrices sum is

4      6      8      10
12     14     16     18
20     22     26     28
```


Program 8

//8. Develop a C program to copy one string to another string and find its length without using built in functions.

```
#include<stdio.h>
int len(char str[20])
{
    int i=0,count=0;
    while(str[i]!='\0')
    {
        count += 1;
        i++;
    }
    return count;
}
int main()
{
    char str1[20],str2[20];
    int i=0,j=0;
    printf("Enter the string to be copied\n");
    scanf("%s",str1);
    while(str1[i] != '\0')
    {
        str2[j]=str1[i];
        i++;
        j++;
    }str2[j]='\0';
    printf("Original string is %s\n",str1);
    printf("Copied string is %s\n",str2);
    printf("Length of the string is %d\n",len(str1));
    return 0;
}
```

Output of 8th program:

```
[(base) akashm@Akashs-MacBook-Pro Lab8 % ./Stringcopy
Enter the string to be copied
AkashM
Original string is AkashM
Copied string is AkashM
Length of the string is 6
```

Program 9

//9.Develop a C program to create student structure, read two student details(Student roll number, name, section, department, fees, and results i.e., total marks obtained) and print the student details who has scored the highest.

```
#include<stdio.h>
struct student{
    int rollnumber;
    char name[20];
    char section[20];
    char dept[10];
    float fees;
    int totalmarks;
};
int main()
{
    int i;
    struct student stud1,stud2;
    printf("Enter Roll of student 1\n");
    scanf("%d",&stud1.rollnumber);
    printf("Enter name of student 1\n");
    scanf("%s",stud1.name);
    printf("Enter the Section of student 1\n");
    scanf("%s",stud1.section);
    printf("Enter the department of student 1\n");
    scanf("%s",stud1.dept);
    printf("Enter the fees of student 1\n");
    scanf("%f",&stud1.fees);
    printf("Enter total marks of student 1\n");
    scanf("%d",&stud1.totalmarks);
    printf("Enter Roll of student 2\n");
    scanf("%d",&stud2.rollnumber);
    printf("Enter name of student 2\n");
    scanf("%s",stud2.name);
    printf("Enter the Section of student 2\n");
    scanf("%s",stud2.section);
    printf("Enter the department of student 2\n");
    scanf("%s",stud2.dept);
    printf("Enter the fees of student 2\n");
    scanf("%f",&stud2.fees);
    printf("Enter total marks of student 2\n");
    scanf("%d",&stud2.totalmarks);
    printf("Roll Number of student 1 %d\n",stud1.rollnumber);
    printf("Name of student 1 %s\n",stud1.name);
    printf("Section of student 1 %s\n",stud1.section);
    printf("Department of student1 %s\n",stud1.dept);
    printf("Fees of student1 %0.2f\n",stud1.fees);
    printf("Total marks of student 1 %d\n",stud1.totalmarks);
    printf("Roll Number of student 2 %d\n",stud2.rollnumber);
    printf("Name of student 2 %s\n",stud2.name);
    printf("Section of student 2 %s\n",stud2.section);
    printf("Department of student 2 %s\n",stud2.dept);
    printf("Fees of student2 %0.2f\n",stud2.fees);
    printf("Total marks of student 2 %d\n",stud2.totalmarks);
    if(stud1.totalmarks>stud2.totalmarks)
    {
        printf("Student 1 secured highest marks");
    }
    else if(stud1.totalmarks==stud2.totalmarks)
    {
        printf("Student 1 and 2 secured same marks");
    }
    else
    {
        printf("Student 2 secured highest marks");
    }
    return 0;
}
```

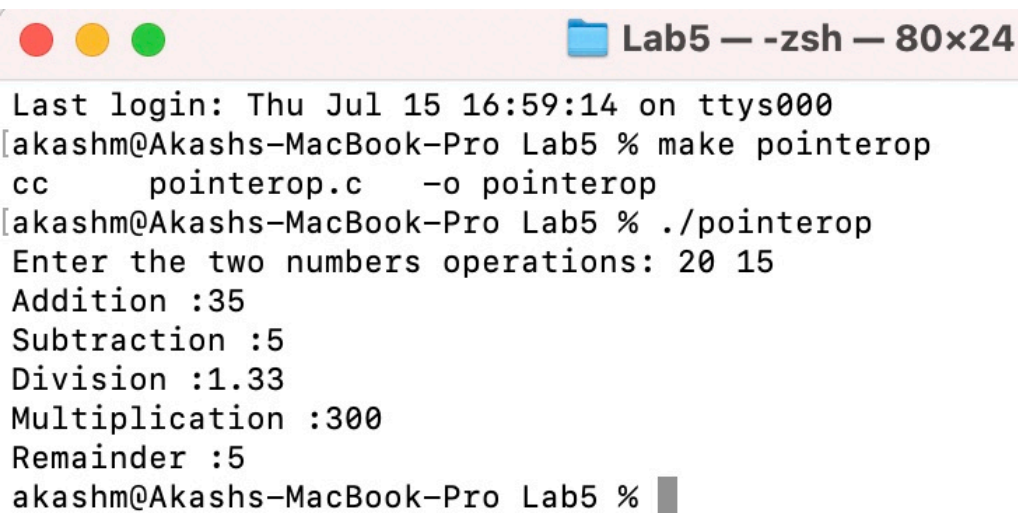
Output of 9th problem:

```
.....  
[(base) akashm@Akashs-MacBook-Pro Lab8 % ./structures  
Enter Roll of student 1  
203  
Enter name of student 1  
Akash  
Enter the Section of student 1  
CN  
Enter the department of student 1  
CSe  
Enter the fees of student 1  
50000  
Enter total marks of student 1  
595  
Enter Roll of student 2  
201  
Enter name of student 2  
Aaditya  
Enter the Section of student 2  
CN  
Enter the department of student 2  
CSE  
Enter the fees of student 2  
50000  
Enter total marks of student 2  
594  
Roll Number of student 1 203  
Name of student 1 Akash  
Section of student 1 CN  
Department of student1 CSe  
Fees of student1 50000.00  
Total marks of student 1 595  
Roll Number of student 2 201  
Name of student 2 Aaditya  
Section of student 2 CN  
Department of student 2 CSE  
Fees of student2 50000.00  
Total marks of student 2 594
```

Program 10

```
/*10. Develop a C program to perform arithmetic
operations (addition, subtraction,
multiplication, division and remainder) on two integers
using pointers.*/
#include<stdio.h>
int operations(int *, int *, int *, int *, int*, float
*, int *);
int main()
{
    int a,b;
    int add,sub,multiplication,rem;
    float division;
    printf("Enter the two numbers operations: ");
    scanf("%d %d",&a,&b);
    operations(&a, &b, &add, &sub, &multiplication,
&division, &rem);
    printf("Addition :%d\n",add);
    printf("Subtraction :%d\n",sub);
    printf("Division :%0.2f\n",division);
    printf("Multiplication :%d\n",multiplication);
    printf("Remainder :%d\n",rem);
    return 0;
}
int operations(int *a, int *b, int *add, int *sub, int
*multiplication, float *division, int *rem)
{
    *add=*a+*b;
    *sub=*a-*b;
    *multiplication=*a**b;
    *division=(float)(*a)/(*b);
    *rem=(*a)%(*b);
    return 0;
}
```

Output of 10th program:

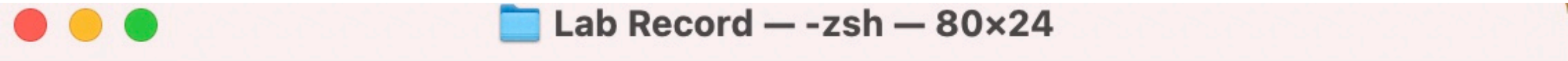


```
Lab5 — -zsh — 80x24
Last login: Thu Jul 15 16:59:14 on ttys000
[akashm@Akashs-MacBook-Pro Lab5 % make pointerop
cc      pointerop.c      -o pointerop
[akashm@Akashs-MacBook-Pro Lab5 % ./pointerop
Enter the two numbers operations: 20 15
Addition :35
Subtraction :5
Division :1.33
Multiplication :300
Remainder :5
akashm@Akashs-MacBook-Pro Lab5 %
```

Program 11

```
//11. Illustrate pointers in swapping two numbers.
#include<stdio.h>
int swapptr(int *, int *);
int main()
{
    int a,b;
    printf("Enter two numbers to swap\n");
    scanf("%d %d",&a,&b);
    printf("Before Swapping\n");
    printf("a :%d b :%d\n",a,b);
    swapptr(&a, &b);
    printf("After Swapping\n");
    printf("a :%d b :%d",a,b);
    return 0;
}
int swapptr(int *a, int *b)
{
    int *temp;
    *temp=*a;
    *a=*b;
    *b=*temp;
    return 0;
}
```

Output of 11th program:



```
Last login: Fri Jul 16 17:27:50 on ttys000
akashm@Akashs-MacBook-Pro Lab Record % make ptrswap
make: `ptrswap' is up to date.
akashm@Akashs-MacBook-Pro Lab Record % ./ptrswap
Enter two numbers to swap
4 5
Before Swapping
a :4 b :5
After Swapping
a :5 b :4%
akashm@Akashs-MacBook-Pro Lab Record %
```


Program 12

/*12. Demonstrate how to read data from the keyboard, write it to a file called BMSCE.txt, again read the same data from the BMSCE file, and display it on the screen/console.*/

```
#include<stdio.h>
int main()
{
    char feedback[40];
    FILE *fp;
    fp=fopen("BMSCE.txt","w");
    printf("Write something about BMSCE\n");
    fgets(feedback,200,stdin);
    fputs(feedback,fp);
    fclose(fp);
    fp=fopen("BMSCE.txt","r");
    printf("Data read from the file:\n");
    while(fgets(feedback,200,fp) != NULL)
    {
        printf("%s",feedback);
    }
    return 0;
}
```

Last login: Fri Jul 16 17:27:44 on ttys000

```
[akashm@Akashs-MacBook-Pro Lab Record % make files
```

```
cc      files.c  -o files
```

```
[akashm@Akashs-MacBook-Pro Lab Record % ./files
```

```
Write something about BMSCE
```

```
Hello Everyone,This is Akash from BMSCE,BMSCE is one of the oldest private college in whole ASIA.
```

```
Data read from the file:
```

```
Hello Everyone,This is Akash from BMSCE,BMSCE is one of the oldest private college in whole ASIA.
```

```
zsh: abort      ./files
```

```
akashm@Akashs-MacBook-Pro Lab Record % █
```

Output of 12th Program:

BMSCE text file created from 12th program:



 BMSCE.txt

Hello Everyone,This is Akash from BMSCE,BMSCE is one of the oldest private college in whole ASIA.