VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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C PROGRAMMING LAB RECORD

Submitted by

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1BM20CS070

Under the Guidance of

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in partial fulfillment for the award of the degree of

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in

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I,AAAA , 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.

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

```
#include <stdio.h>

int main()

{

   float celsius, fahrenheit;

   printf("Please Enter the temperature in Fahrenheit: \n");

    scanf("%f", &fahrenheit);

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

   printf("\n %.2f Fahrenheit = %.2f Celsius", fahrenheit, celsius);

   return 0;

}
```

```
Please Enter the temperature in Fahrenheit:
102

 102.00 Fahrenheit = 38.89 Celsius
Process returned 0 (0x0)   execution time : 2.448 s
Press any key to continue.
```

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>
float areacalculate(int a, int b, int c)
{
 float s,area,sum;
 sum=a+b+c;
 s=sum/2;
 area=sqrt(s*(s-a)*(s-b)*(s-c));
 printf("area of triangle is: %0.2f",area);
 return 0;
}
int main()
{
  int a1,b1,c1;
  printf("enter three sides :");
  scanf("%d %d %d",&a1,&b1,&c1);
  areacalculate(a1,b1,c1);
  return 0;
}
```

```
enter three sides : 3 4 5
area of triangle is: 6.00
Process returned 0 (0x0)   execution time : 6.031 s
Press any key to continue.
```

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;
   d=(b*b)-(4*a*c);
   if(d>0){
          r1=(-b+sqrt(d))/(a);
          r2=(-b+sqrt(d))/(a);
     printf("Roots are real and distinct %0.2f %0.2f",r1,r2);
   }
   else if(d==0){
          r1=((-b))/(a);
          printf("Roots are real and equal %0.2f %0.2f",r1 ,r2);
   }
   else if(d<0){
          r1=(-b + sqrt (-d))/(a);
          r2=(-b -sqrt (-d))/(a);
          printf("roots are imaginary and distinct %0.2f %0.2f",r1,r2);
   }
   return 0;
}
int main()
```

```
{
   int a,b,c;
   printf("enter the values");
   scanf("%d %d %d",&a,&b,&c);
   roots(a,b,c);
}
```

```
enter the values1 2 3
roots are imaginary and distinct 0.83 -4.83
PS C:\Users\thesu\Desktop\CCP\lab 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 main()
{
 char ch;
 printf("Input a character\n");
 scanf("%c", &ch);
 switch(ch)
 {
  case 'a':
  case 'A':
  case 'e':
  case 'E':
  case 'i':
  case 'I':
  case 'o':
  case 'O':
  case 'u':
  case 'U':
    printf("%c is a vowel.\n", ch);
    break;
  default:
    printf("%c isn't a vowel.\n", ch);
 }
 return 0;
}
```

```
Input a character
a
a is a vowel.
```

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

```
#include<stdio.h>
int even(int m,int n )
{
   int i;
   printf("even numbers from range %d-%d is: \n",m,n);
   if(m%2 != 0)
   {
         m++;
   }
   for(i=m; i<=n; i+=2)
   {
         printf("%d\n",i);
   }
    return 0;
}
int main()
{
   int m,n;
   printf("enter the range m-n to print even numbers\n");
   scanf("%d %d",&m,&n);
   even(m,n);
   return 0;
}
```

```
enter the range m-n to print even numbers
1 10
even numbers from range 1-10 is:
2
4
6
8
10
```

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

```
#include<stdio.h>

int squaresum(n)

{

 int i,sum=0;


 for(i = 1; i <=2*n; i++) {

          if((i % 2) != 0) {

          sum += (i*i);

          }

  }

 printf("Sum of squares of first %d natural odd numbers = %d",  n, sum);


 return sum;

}

int main()

{

 int a;

 printf("enter a number");

 scanf("%d",&a);

 squaresum(a);

}
```

```
enter a number6
Sum of squares of first 6 natural odd numbers = 286
```

7.Develop a program to perform addition of two Matrices

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
        int a[10][10],b[10][10],c[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",&a[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",&b[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++)
                {
                        c[i][j]=a[i][j]+b[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 ",c[i][j]);
                    }
                }
            }
            return 0;
}
```

```
Enter number of Rows in 1st matrix
2
Enter Number of columns in 1st matrix
2
Enter number of Rows in 2nd matrix
2
Enter Number of columns in 2nd matrix
2
Enter the elements of the matrix1
1 2
3 4
Enter the elements of the matrix2
1 2
3 4
Matrices sum is

2 4
6 8
```

8.Develop a C program to copy one string to another string and find its length

```
#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));

}
```

```
Enter the string to be copied
qwe
Original string is qwe
Copied string is qwe
Length of the string is 3
PS C:\Users\thesu\Desktop\CCP\lab8>
```

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\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;
```

```
Enter Roll of student 1
1
Enter name of student 1
atharva
Enter the Section of student 1
CN
Enter the department of student 1
CSE
Enter the fees of student 1
500
Enter total marks of student 1
100
Enter Roll of student 2
2
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
1000
Enter total marks of student 2
60
Roll Number of student 1: 1
Name of student 1: atharva
Section of student 1: CN
Department of student1: CSE
Fees of student1: 500.00
Total marks of student 1: 100

Roll Number of student 2: 2
Name of student 2: aaditya
Section of student 2: CN
Department of student 2: CSE
Fees of student2: 1000.00
Total marks of student 2: 60
Student 1 secured highest marks
PS C:\Users\thesu\Desktop\CCP\lab8>
```

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;}
```

```
Enter the two numbers operations: 20 15
Addition :35
Subtraction :5
Division :1.33
Multiplication :300
Remainder :5
```