VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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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

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

```
#include<stdio.h>


int main()
{
    float fahrenheit,celsius;


    printf("Enter the temperature in degree fahrenheit:\n");
    scanf("%f",&fahrenheit);


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


    printf("The temprature in degree celsius is:%f",celsius);


    return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q1.c -o q1 } ; if ($?) { .\q1 }
Enter the temprature in degree fahrenheit:
45
The temprature in degree celsius is:7.222222
```

PROGRAM 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 area(float a,float b,float c){
    float s,area;
    s=(a+b+c)/2;
    area=sqrt(s*(s-a)*(s-b)*(s-c));

    return area;
}

int main()
{
   float a,b,c;

    printf("Enter the sides of the triangle:\n");
    scanf("%f %f %f",&a,&b,&c);

    printf("Area of triangle is:%f",area(a,b,c));
```

```
return 0;
}
```

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q2.c -o q2 } ; if ($?) { .\q2 }
Enter the sides of the triangle:
3 4 5
Area of triangle is:6.000000
```

PROGRAM 3 : Develop a C program to find all possible roots of a quadratic equation.

```
#include <stdio.h>

#include<math.h>

int main()

{

    float a, b, c;

    float root1, root2, imaginary, discriminant;


    printf("\n Please Enter values of a, b, c of Quadratic Equation :\n  ");

    scanf("%f %f %f", &a, &b, &c);


    discriminant = (b * b) - (4 * a *c);


    if(discriminant > 0)

    {

        root1 = (-b + sqrt(discriminant)) / (2 * a);

        root2 = (-b - sqrt(discriminant)) / (2 * a);

        printf("\n Two Distinct Real Roots Exists: root1 = %.2f and root2 =
%.2f", root1, root2);

    }

    else if(discriminant == 0)

    {

        root1 = root2 = -b / (2 * a);

        printf("\n Two Equal and Real Roots Exists: root1 = %.2f and root2 =
%.2f", root1, root2);

    }

    else if(discriminant < 0)

    {
```

```
        root1 = root2 = -b / (2 * a);
        imaginary = sqrt(-discriminant) / (2 * a);
        printf("\n Two Distinct Complex Roots Exists: root1 = %.2f+%.2fi and
root2 = %.2f-%.2fi", root1, imaginary, root2, imaginary);
    }

    return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q3.c -o q3 } ; if ($?) { .\q3 }

 Please Enter values of a, b, c of Quadratic Equation :
  1 5 6

 Two Distinct Real Roots Exists: root1 = -2.00 and root2 = -3.00
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q3.c -o q3 } ; if ($?) { .\q3 }

 Please Enter values of a, b, c of Quadratic Equation :
1 2 1

 Two Equal and Real Roots Exists: root1 = -1.00 and root2 = -1.00
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q3.c -o q3 } ; if ($?) { .\q3 }

 Please Enter values of a, b, c of Quadratic Equation :
2 1 4

 Two Distinct Complex Roots Exists: root1 = -0.25+1.39i and root2 = -0.25-1.39i
```

PROGRAM 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 s;
    printf("Enter the letter:\n");
    scanf("%c", &s);
    getchar();


    switch (s)
    {
    case 'A':




    case 'E':



    case 'I':



    case 'O':
```

```
case 'U':


case 'a':


case 'e':


case 'i':


case 'o':


case 'u':
printf("%c is vowel.",s);
break;

default:
    printf(" %c is consonant.", s);
    break;
```

```
    }
    return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q4.c -o q4 } ; if ($?) { .\q4 }
Enter the letter:
u
u is vowel.
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q4.c -o q4 } ; if ($?) { .\q4 }
Enter the letter:
t
 t is consonant.
```

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

```
#include<stdio.h>


int main()
{
   int m,n;

   printf("Enter the number from which you want to start:\n");
   scanf("%d",&m);


   printf("Enter the number till which you want:\n");
   scanf("%d",&n);

   printf("The even numbers are:\n");
  for (int i = m; i <= n; i++)
  {
      if (i%2==0)
      {
         printf("%d\t",i);
      }

  }
  return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q5.c -o q5 } ; if ($?) { .\q5 }
Enter the number from which you want to start:
5
Enter the number till which you want:
89
The even numbers are:
6       8       10      12      14      16      18      20      22      24      26      28      30      32      34      36      38      40      42      44      46      48      50
2       54      56      58      60      62      64      66      68      70      72      74      76      78      80      82      84      86      88
```

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

```
#include<stdio.h>


int main()
{
    int n,num;
    int sum=0;



    printf("Enter the number of odd numbers till which you want the sum:\n");
    scanf("%d",&n);


    for (int i = 0; i < n; i++)
    {
        num = 2*i+1;
        sum += num*num;
    }


    printf("The sum is:%d",sum);
    return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q6.c -o q6 } ; if ($?) { .\q6 }
Enter the number of odd numbers till which you want the sum:
23
The sum is:16215
```

PROGRAM 7 : Develop a program to perform addition of two Matrices.

```
#include <stdio.h>
#define max 100
int main()
{
    int M, N;
    int sum[max][max];
    int m1[max][max];
    int m2[max][max];
    printf("Enter colomns and rows of the Matrices: ");
    scanf("%d %d", &M, &N);
    printf("Enter elements of first Matrix:\n");
    for (int i = 0; i < M; ++i)
    {
        for (int j = 0; j < N; ++j)
        {
            scanf("%d", &m1[i][j]);
        }
    }
    printf("Enter elements of second Matrix:\n");
    for (int i = 0; i < M; ++i)
    {
        for (int j = 0; j < N; ++j)
        {
            scanf("%d", &m2[i][j]);
        }
    }
```

```
    for (int i = 0; i < M; ++i)
     {
         for (int j = 0; j < N; ++j)
         {
             sum[i][j] = m1[i][j] + m2[i][j];
         }
     }
     printf("Resultant Matrix:\n");
     for (int i = 0; i < M; ++i)
     {
         for (int j = 0; j < N; ++j)
         {
             printf("%d ", sum[i][j]);
         }
         printf("\n");
     }
     printf("\n");
    return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q7.c -o q7 } ; if ($?) { .\q7 }
Enter colomns and rows of the Matrices: 2 3
Enter elements of first Matrix:
4 4
5 7
2 5
Enter elements of second Matrix:
6 5
8 9
1 4
Resultant Matrix:
10 9 13
16 3 9
```

PROGRAM 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;}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q8.c -o q8 } ; if ($?) { .\q8 }
Enter the string to be copied
Hello
Original string is Hello
Copied string is Hello
Length of the string is 5
```

PROGRAM 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;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q9.c -o q9 } ; if ($?) { .\q9 }
Enter Roll of student 1
13
Enter name of student 1
bunty
Enter the Section of student 1
a
Enter the department of student 1
cse
Enter the fees of student 1
200000
Enter total marks of student 1
68
Enter Roll of student 2
14
Enter name of student 2
tomar
Enter the Section of student 2
c
Enter the department of student 2
ise
Enter the fees of student 2
30000
Enter total marks of student 2
38
Roll Number of student 1 13
Name of student 1 bunty
Section of student 1 a
Department of student1 cse
Fees of student1 200000.00
Total marks of student 1 68
Roll Number of student 2 14
Name of student 2 tomar
Section of student 2 c
Department of student 2 ise
Fees of student2 30000.00
Total marks of student 2 38
Student 1 secured highest marks
```

PROGRAM 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;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q10.c -o q10 } ; if ($?) { .\q10 }
Enter the two numbers operations: 5 8
Addition :13
Subtraction :-3
Division :0.63
Multiplication :40
Remainder :5
```

PROGRAM 11 : Illustrate pointers in swapping two numbers.

```
#include <stdio.h>


// function to swap the two numbers
void swap(int *x,int *y)
{
    int t;
     t   = *x;
    *x   = *y;
    *y   =  t;
}


int main()
{
    int num1,num2;


    printf("Enter value of num1: ");
    scanf("%d",&num1);
    printf("Enter value of num2: ");
    scanf("%d",&num2);



    printf("Before Swapping: num1 is: %d, num2 is: %d\n",num1,num2);
```

```
    swap(&num1,&num2);



    printf("After  Swapping: num1 is: %d, num2 is: %d\n",num1,num2);


    return 0;
}
```

```
PS C:\Users\ASUS\Desktop\CCP_LAB> cd "c:\Users\ASUS\Desktop\CCP_LAB\" ; if ($?) { gcc q11.c -o q11 } ; if ($?) { .\q11 }
Enter value of num1: 3
Enter value of num2: 8
Before Swapping: num1 is: 3, num2 is: 8
After  Swapping: num1 is: 8, num2 is: 3
```

PROGRAM 12 : Demonstrate how to read data from the keyboard, write it to a file called BMSCE,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;


}
```

```
It's a great college!!
```