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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B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I,Varun Chahal , 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.

VARUN CHAHAL(1BM20CS181)

1. **Develop a C program to convert degrees Fahrenheit into degrees Celsius**

```
#include <stdio.h>
int main()
{
   float celsius, fahrenheit;
   printf("Enter temperature in Fahrenheit: ");
   scanf("%f", &fahrenheit);
   celsius = (fahrenheit - 32) * 5 / 9;
   printf("%.2f Fahrenheit = %.2f Celsius", fahrenheit,
celsius);
return 0;
}
```

```
Enter temperature in Fahrenheit: 37
37.00 Fahrenheit = 2.78 Celsius
```

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

```
#include<stdio.h>
#include<math.h>
double area_of_triangle(double,double,double);
int main()
{
 double a,b,c,area;
 printf("\nEnter the lengths of triangle");
 scanf("%lf%lf%lf",&a,&b,&c);
 area=area_of_triangle(a,b,c);
 printf("Area of triangle=%.2lf\n",area);
  return 0;
}
double area_of_triangle(double a,double b,double c)
{
      double s,area;
      s=(a+b+c)/2;
      area=sqrt(s*(s-a)*(s-b)*(s-c));
      return area;
}
```

```
Enter the lengths of triangle 10 13 14
Area of triangle=62.39
```

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

```
#include <math.h>
#include <stdio.h>
int main()
{
        double a, b, c, discriminant, root1, root2, realPart,
        imagPart;
        printf("Enter coefficients a, b and c: ");
       scanf("%lf %lf %lf", &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("root1 = %.2lf and root2 = %.2lf", root1, root2);
}
      else if (discriminant == 0)
{
          root1 = root2 = -b / (2 * a);
          printf("root1 = root2 = %.2lf;", root1);
}
      Else
```

```
{
      realPart = -b / (2 * a);
      imagPart = sqrt(-discriminant) / (2 * a);
      printf("root1 = %.2lf+%.2lfi and root2 = %.2f-%.2fi",
   realPart, imagPart, realPart, imagPart);
   }

   return 0;
}
```

Case 1: Output for **real and equal**

```
Enter coefficients a, b and c: 2 4 2
root1 = root2 = -1.00;
```

Case 2: Output for **real and unequal**

```
Enter coefficients a, b and c: 2 -8 2
root1 = 3.73 and root2 = 0.27
```

Case 3: Output for **real and imaginary**

```
Enter coefficients a, b and c: 2.3 4 5.6
root1 = -0.87+1.30i and root2 = -0.87-1.30i
```

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

```
#include <stdio.h>
int main()
{
        char ch;
        printf("Enter any alphabet: ");
        scanf("%c", &ch);
        switch(ch)
 {
            case 'a':
            case 'e':
            case 'i':
            case 'o':
            case 'u':
            case 'A':
            case 'E':
            case 'I':
            case 'O':
            case 'U':
               printf("Vowel");
               break;
            default:
               printf("Consonant");
```

```
}

    return 0;

}
```

```
Enter any alphabet: a
Vowel
```

```
Enter any alphabet: b
Consonant
```

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

```
#include<stdio.h>
int main()
{
        int i, uppernumber,lowenumber;

        printf("\n Please Enter the Minimum Limit Value : ");
        scanf("%d", &lowenumber);

        printf("\n Please Enter the Maximum Limit Value : ");
        scanf("%d", &uppernumber);

        printf("\n Even Numbers between %d and %d are :
        \n",lowenumber,uppernumber);
        for(i = lowenumber; i <= uppernumber; i++)
  {
        if ( i % 2 == 0 )
  {
                        printf(" %d\t", i);
   }
   }

        return 0;
```

```
}
```

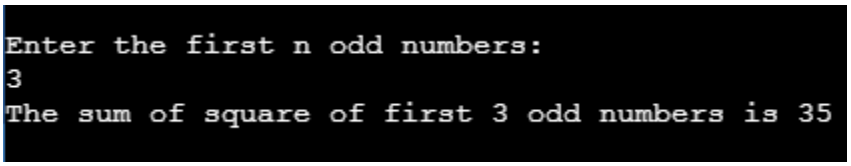
```
Please Enter the Minimum Limit Value : 20

Please Enter the Maximum Limit Value : 40

Even Numbers between 20 and 40 are :
20      22      24      26      28      30      32      34      36      38      40
```

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

```
#include <stdio.h>
int main()
{
  int n;
  printf("\nEnter the first n odd numbers:\n");
  scanf("%d", &n);
  int sum = 0;
  for (int i = 1; i <= n; i++)
    sum += (2*i - 1) * (2*i - 1);
  printf("The sum of square of first %d odd numbers is
%d",n, sum);
  return 0;
}
```



7. Develop a C program to perform addition of two matrices

```
#include<stdio.h>
#define ROW 2
#define COL 3
int main()
{
        int i, j, arr1[ROW][COL], arr2[ROW][COL];

        printf("Enter first matrix: \n");

        for(i = 0; i < ROW; i++)
 {
           for(j = 0; j < COL; j++)
  {
              scanf("%d", &arr1[i][j]);
 }
 }
        printf("\nEnter second matrix: \n");
        for(i = 0; i < ROW; i++)
 {
           for(j = 0; j < COL;j++)
 {
```

```
            scanf("%d", &arr2[i][j]);
}
}
        printf("\narr1 + arr2 = \n");
        for(i = 0; i < ROW; i++)
{
            for(j = 0; j < COL; j++)
{
                printf("%5d ", arr1[i][j] + arr2[i][j]);
 }
                printf("\n");
  }
        return 0;
   }
```

```
Enter first matrix:
10 20 30
40 50 60

Enter second matrix:
100 110 120
130 140 150

arr1 + arr2 =
  110   130   150
  170   190   210
```

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 main()
{
  char s1[100], s2[100];
  int i;
  printf("\nEnter the string :");
  scanf("%s",s1);
  i = 0;
  while (s1[i] != '\0')
  {
    s2[i] = s1[i];
    i++;
  }
  s2[i] = '\0';
  printf("\nCopied String is %s and length is %i", s2,i);
  return 0;
}
```

```
Enter the string :VARUN

Copied String is VARUN and length is 5
```

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>
int main()
{
   struct student
   {
      char firstName[50];
      char section[10];
      char dept[10];
      int roll;
      float marks;
      float fees;
   };

   int i,highestmarks,studentnumber;
   struct student s[2];
   printf("Enter information of students:\n");
   for (i=0; i<2;i++)
   {
      printf("\nSTUDENT NUMBER:%d",i);
      printf("\nEnter student name: ");
      scanf("%s", s[i].firstName);
      printf("Enter student section: ");
      scanf("%s", s[i].section);
```

```
        printf("Enter student department name: ");
        scanf("%s", s[i].dept);
        printf("Enter student roll number:");
        scanf("%d", &s[i].roll);
        printf("Enter student marks: ");
        scanf("%f", &s[i].marks);
        printf("Enter student fee: ");
        scanf("%f", &s[i].fees);
    }
    highestmarks =0;
    studentnumber = 0;
    for (i = 0; i < 2; i++)
    {
        if(s[i].marks > highestmarks)
        {
            highestmarks = s[i].marks;
            studentnumber = i;
        }
    }

    printf("\nDisplaying Student Information with highest
score:\n\n");
    printf("Name:%s ",s[studentnumber].firstName);
    printf("\nMarks: %.1f", s[studentnumber].marks);
    printf("\n");
    return 0;
}
```

```
Enter information of students:

STUDENT NUMBER:0
Enter student name: RAHUL
Enter student section: CA
Enter student department name: IS
Enter student roll number:1
Enter student marks: 50
Enter student fee: 1000

STUDENT NUMBER:1
Enter student name: RAM
Enter student section: CB
Enter student department name: CS
Enter student roll number:2
Enter student marks: 60
Enter student fee: 2000

Displaying Student Information with highest score:

Name:RAM
Marks: 60.0
```

10. Develop a C program to perform arithmetic operations (addition, subtraction, multiplication, division and remainder) on two integers using pointers

```
#include<stdio.h>
int main()
{
        int no1,no2;
        int *ptr1,*ptr2;
    int sum,sub,mult;
    float div;
    printf("Enter number1:\n");
    scanf("%d",&no1);
    printf("Enter number2:\n");
    scanf("%d",&no2);
    ptr1=&no1;
    ptr2=&no2;
    sum=(*ptr1) + (*ptr2);
    sub=(*ptr1) - (*ptr2);
    mult=(*ptr1) * (*ptr2);
    div=(*ptr1) / (*ptr2);
    printf("sum= %d\n",sum);
```

```
    printf("subtraction= %d\n",sub);
    printf("Multiplication= %d\n",mult);
    printf("Division= %f\n",div);
    return 0;
}
```

```
Enter number1:
20
Enter number2:
10
sum= 30
subtraction= 10
Multiplication= 200
Division= 2.000000
```

11. Illustrate pointers in swapping two numbers.

```
#include <stdio.h>
void swap(int *,int *x);
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;
}
 void swap(int *x,int *y)
{
 int t;
 t   = *x;
```

```
    *x  = *y;
    *y  =  t;
}
```

```
Enter value of num1: 10
Enter value of num2: 20
Before Swapping: num1 is: 10, num2 is: 20
After  Swapping: num1 is: 20, num2 is: 10
```

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;

}
```

```
Write something about BMSCE
Hello everyone,this is Varun from BMSCE.BMSCE is one of the oldest private colleges
Data read from the file:
Hello everyone,this is Varun from BMSCE.BMSCE is one of the oldest private colleges
```