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
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in
COMPUTER SCIENCE AND ENGINEERING

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B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I,Kartikeya Mishra , 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.

KARTIKEYA MISHRA(1BM20IS060)

1. Develop a C program to convert degrees Fahrenheit to degree Celsius

```
#include<stdio.h>
int main()
{
   float fah, cel;
   printf("Enter a temp in fah: \n");
   scanf("%f", &fah);
   cel = (5.0/9) * (fah - 32);
   printf("%.2f°F is same as %.2f°C", fah, cel);
   return 0;
}
```

```
Enter a temp in fah:
50
50.00°F is same as 10.00°C
```

2. Develop a C program to find the area of the triangle given the sides 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("Enter the lengths of sides of a triangle\n");

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

  area = area_of_triangle(a, b, c);

  printf("Area of the 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 sides of a triangle
20 22 26
Area of the triangle = 213.77
```

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:Real and equal

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

Case 2:Real and unequal

```
Enter coefficients a, b and c: 4 -8 2
root1 = 1.71 and root2 = 0.29
```

Case 3:Real and imaginary

```
Enter coefficients a, b and c: 1.3 5 6.7
root1 = -1.92+1.21i and root2 = -1.92-1.21i
```

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("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: o
Vowel
```

```
Enter any alphabet: d
Consonant
```

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

```
#include<stdio.h>
int main()
{

        int a,b,c,i;
       printf("   Give the First number for the Range :   \n");
        scanf("%d",&a);
        printf("   Give the Final number for the Range :   \n");
        scanf("%d",&b);
       printf("\n The Even numbers between %d and %d are ",a,b);
        for(i=a; i<=b; ++i)
{

           c = i % 2;
           if(c == 0)
           printf("\n  %d",i);
        }
   return 0;
   }
```

```
   Give the First number for the Range :
70
   Give the Final number for the Range :
80

 The Even numbers between 70 and 80 are
  70
  72
  74
  76
  78
  80
```

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

```
#include <stdio.h>
int main()
{
   int a[1000],i,n,min,max,minpos,maxpos,pos;

   printf("Enter size of the array : ");
   scanf("%d",&n);
```

```
    printf("Enter elements in array : ");
    for(i=0; i<n; i++)

       scanf("%d",&a[i]);


    min=max=a[0];
    for(i=1; i<n; i++)

        if(min>a[i])
                {min=a[i];
         minpos=i;}

                if(max<a[i])
                 {  max=a[i];
         maxpos=i;}


    pos=a[maxpos];
         a[maxpos]=a[minpos];
         a[minpos]=pos;
         printf("\nAfter interchange array elemnts are: ");
         for(i=0;i<n;i++)
                printf("%d ",a[i]);



    return 0;
}
```

```
Enter size of the array : 9
Enter elements in array : 9
8
7
6
5
4
3
2
1

After interchange array elemnts are: 1 8 7 6 5 4 3 2 9
```

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

```
#include <stdio.h>
#include <conio.h>
int x,y;
void main()

{
   printf("enter the size of matrix");
```

```
    printf("\n enter the number of rows");
    scanf("%d",&x);
    printf("\n enter the number of columns");
    scanf("%d",&y);
    int a[x][y],b[x][y],c[x][y],i,j;

        printf("\nENTER VALUES FOR MATRIX A:\n");
        for(i=0;i<x;i++)
                for(j=0;j<y;j++)
                        scanf("%d",&a[i][j]);
        printf("\nENTER VALUES FOR MATRIX B:\n");
        for(i=0;i<x;i++)
                for(j=0;j<y;j++)
                        scanf("%d",&b[i][j]);
        for(i=0;i<x;i++)
                for(j=0;j<y;j++)
                        c[i][j]=a[i][j]+b[i][j];
        printf("\nTHE VALUES OF MATRIX C ARE:\n");
        for(i=0;i<x;i++)
       {
                for(j=0;j<y;j++)
                        printf("%5d",c[i][j]);
                printf("\n");
        }
        getch();
}
```

```
enter the size of matrix
 enter the number of rows 2

 enter the number of columns 2

ENTER VALUES FOR MATRIX A:
10 20 30 40

ENTER VALUES FOR MATRIX B:
50 60 70 80

THE VALUES OF MATRIX C ARE:
   60   80
  100  120
```

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

#include<stdio.h>

```
#include<conio.h>
#include<string.h>
int main()
{
   char s1[1000],s2[1000];
   int i;

   printf("Enter any string: ");
   gets(s1);
   for(i=0;s1[i]!='\0';i++)
   {
       s2[i]=s1[i];
       }
    s2[i]='\0';

   printf("original string s1='%s'\n",s1);
   printf("copied string   s2='%s'",s2);
   for (i = 0; s1[i] != '\0'; ++i);
   printf("\n Length of the original string is %d", i);

   return 0;
}
```

```
Enter any string: KARTIKEYA
original string s1='KARTIKEYA'
copied string   s2='KARTIKEYA'
 Length of the original string is 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>
typedef struct
{
  char name[30];
  int roll;
  char section[30];
  char department[30];
  int fees;
  int results;

}
Student;

int main()
{
  char buffer;

  int n=2;


  Student students[n];

  printf("Enter %d Student Details \n \n",n);
  for(int i=0; i<n; i++){
    printf("Student %d:- \n",i+1);
```

```
  printf("Name: ");
  scanf("%s",&students[i].name);


  printf("Roll: ");
  scanf( "%d",&students[i].roll );


  printf("section: ");
  scanf("%s",&students[i].section);

  printf("department: ");
  scanf ("%s",&students[i].department);


  printf("fees: ");
  scanf("%d",&students[i].fees);


  printf("results: ");
  scanf("%d",&students[i].results);


  printf("\n");
}


printf("---------- All Students Details ----------\n");
for(int i=0; i<n; i++){
  printf("Name: ");
```

```
    printf("%s \n",students[i].name);

    printf("Roll \t: ");
    printf("%d \n",students[i].roll);

    printf("section: ");
    printf("%s \n",students[i].section);

    printf("department: ");
    printf("%s \n",students[i].department);

    printf("fees \t: ");
    printf("%d \n",students[i].fees);

    printf("results \t: ");
    printf("%d \n",students[i].results);
    printf("\n");
  }
  if(students[1].results > students[2].results)
  printf("%s got more marks",students[1].name);
  else
  printf("%s got more marks",students[2].name);

  return 0;
}
```

```
Student 1:-
Name: RAM
Roll: 1
section: A
department: CS
fees: 100
results: 90

Student 2:-
Name: KARIKEYA
Roll: 2
section: B
department: IS
fees: 200
results: 92

-------------- All Students Details ---------------
Name: RAM
Roll    : 1
section: A
department: CS
fees    : 100
results         : 90

Name: KARIKEYA
Roll    : 2
section: B
department: IS
fees    : 200
results         : 92

KARIKEYA got more marks
```

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: 250
Enter value of num2: 300
Before Swapping: num1 is: 250, num2 is: 300
After  Swapping: num1 is: 300, num2 is: 250
```

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 Kartikeya from BMSCE.BMSCE is one of the oldest private colleges in Asia
Data read from the file:
Hello everyone,this is Kartikeya from BMSCE.BMSCE is one of the oldest private colleges in Asia
```