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,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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Note: - Below given all programs are practiced on

→ https://www.programiz.com/c-programming/online-compiler/

So, please check every programs on the given link to avoid errors.

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

Code: -

```
#include <stdio.h>

 int main()
{
        float f,c;
        printf("Enter temperature in fahrenheit:");
        scanf("%f",&f);
        c= (((f-32)*5)/9);
        printf("temperature in celsius is %f",c);
        return 0;
}
```

Output: -

```
Output

/tmp/dYaxtDmMJ9.o
Enter temperature in fahrenheit:1098
temperature in celsius is 592.222229
```

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

Code: -

```
#include <stdio.h>
double area(double a, double b, double c);
int main()
{
        double a, b, c, ans;
        printf(" Enter the sides of the triangle:-");
        scanf("%lf%lf%lf", &a, &b, &c);
        ans = area(a,b,c);
        printf("Area = %1f",ans);
        return 0;
}
double area(double a, double b, double c)
{
        double res,s;
        s= (a+b+c)/2;
        res = sqrt(s*(s-a)*(s-b)*(s-c));
        return res;
}
```

Output: -

```
Output

/tmp/X3rQAS3Knp.o
Enter the sides of the triangle:-3 4 5
Area = 6.000000
```

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

Code: -

```
#include <stdio.h>
getroot(int a,int b,int c);
int main()
{
	int a,b,c;
	printf("Enter value of a, b, c such that 'a' is coefficient of x^2
		,'b' is coefficient of x and 'c' is a constant.\n");
	printf("a = ");
	scanf("%d",&a);
	printf("b = ");
	scanf("%d",&b);
	printf("c = ");
	scanf("%d",&c);
	getroot(a,b,c);
	return 0;
}
getroot(int a,int b,int c)
{
	double d,r1,r2,ip,rp;
	d = ((b*b)-(4*a*c));
	if(d==0)
	{
		r1 = (-b)/(a);
		printf("roots are r1 = r2 = %.2f", r1/2);
	}
	else if(d>0)
	{
		r1 = (((-b)+(sqrt(d)))/(2*a));
		r2 = (((-b)-(sqrt(d)))/(2*a));
		printf("roots are:\n");
		printf("r1 = %.2f \n",r1);
		printf("r2 = %.2f",r2);
	}
	else
	{
		rp =(-b)/(2*a);
```

```
                ip =sqrt(-d)/(2*a);
                ip=sqrt(ip*ip);
                printf("r1 = %.2f - i%.2f\n", rp,ip);
                printf("r2 = %.2f + i%.2f", rp,ip);
        }
}
```

Output: -

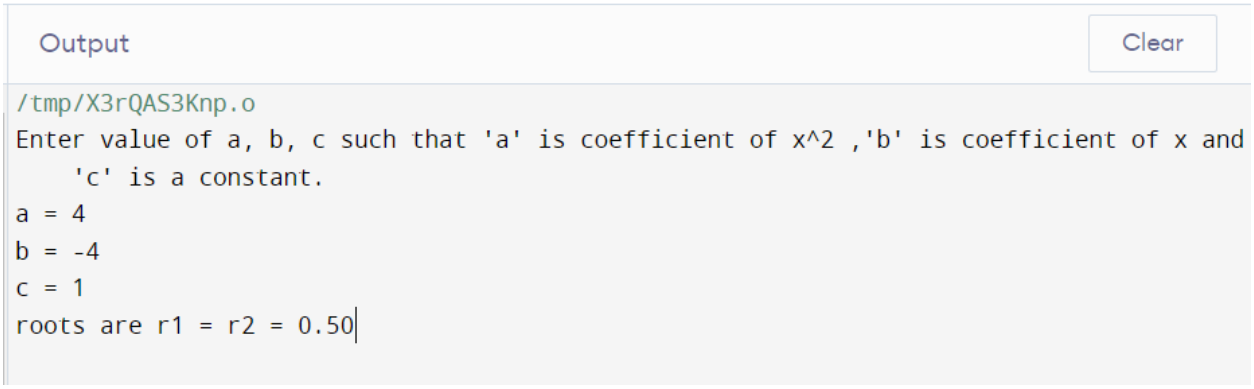
a. Real roots

```
Output                                                    Clear

/tmp/X3rQAS3Knp.o
Enter value of a, b, c such that 'a' is coefficient of x^2 ,'b' is coefficient of x and
    'c' is a constant.
a = 6
b = 11
c = -35
roots are:
r1 = 1.67
r2 = -3.50
```

b. Imaginary roots

```
Output                                                    Clear

/tmp/X3rQAS3Knp.o
Enter value of a, b, c such that 'a' is coefficient of x^2 ,'b' is coefficient of x and
    'c' is a constant.
a = 1
b = 4
c = 5
r1 = -2.00 - i1.00
r2 = -2.00 + i1.00
```

c. Equal roots



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

Code: -

```
#include <stdio.h>
void check(char x1, char x2);
int main()
{
	char a,b;
	printf("Enter the character:  ");
	scanf("%c",&a);
	b=a;
	if(a>=65 && a<=90)
	{
		a = a+32;
	}
	check(a, b);
	return 0;
}
void check(char x1, char x2)
{
	switch(x1)
		{
		case 'a':
			printf("%c is a vowel", x2);
			break;
		case 'e':
			printf("%c is a vowel", x2);
```

```
            break;
        case 'i':
            printf("%c is a vowel", x2);
            break;
        case 'o':
            printf("%c is a vowel", x2);
            break;
        case 'u':
            printf("%c is a vowel", x2);
            break;
        default:
            printf("%c is a consonant", x2);
        }
}
```

Output: -

a. Vowel

```
Output
/tmp/X3rQAS3Knp.o
Enter the character:  a
a is a vowel
```

b. Consonant

```
Output
/tmp/X3rQAS3Knp.o
Enter the character:  z
z is a consonant
```

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

Code: -

```
#include <stdio.h>
void print(int m, int n);
int main()
{
	int m,n;
	printf("enter the value of m and n:\n");
	printf("m = ");
	scanf("%d", &m);
	printf("n = ");
	scanf("%d", &n);
	if(m>=n)
	{
		printf("NOT POSSIBLE for the given numbers");
	}
	else
	{
		print(m,n);
	}
	return 0;
}
void print(int m, int n)
{
	printf("Even numbers between %d and %d:\n",m,n);
	do
	{
		if(m%2==0)
		{
		printf(">%d \n", m);
		m=m+1;
		}
		else
		{
			m=m+1;
		}
	}while(m<=n);
	return 0;
}
```

Output: -

```
Output

/tmp/X3rQAS3Knp.o
enter the value of m and n:
m = 5
n = 10
Even numbers between 5 and 10:
>6
>8
>10
```

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

Code: -

```
#include <stdio.h>
void print(int n);
int main()
{
        int n;
        printf("Enter the value of n:  ");
        scanf("%d", &n);
        print(n);
        return 0;
}
void print(int n)
{
        int ans =0;
        int i=1;
        for(int j=0;j<n;j++)
        {
        ans = ans + (i*i);
        i=i+2;
        }
        printf("Sum of first %d numbers is  %d",n,ans);
}
```

Output: -

```
Output

/tmp/X3rQAS3Knp.o
Enter the value of n:  5
Sum of first 5 numbers is  165
```

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

Code: -

```
#include <stdio.h>
void print(int arr[2][3]);
void main()
{
	int a[2][3],b[2][3],c[2][3];
	printf("\nENTER VALUES FOR MATRIX A:\n");
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<3;j++)
		{
			scanf("%d",&a[i][j]);
		}
	}
	printf("\nENTER VALUES FOR MATRIX B:\n");
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<3;j++)
		{
			scanf("%d",&b[i][j]);
		}
	}
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<3;j++)
		{
		c[i][j]=a[i][j]+b[i][j];
		}
	}
	print(c);
}
void print(int arr[2][3])
{
	printf("\nThe new matrix (Sum of two above matrix) is:\n");
	for(int i=0;i<2;i++)
	{
		for(int j=0;j<3;j++)
```

```
                {
                        printf("%d\t",arr[i][j]);
                }
                printf("\n");
        }
}
```

Output: -

```
Output

/tmp/X3rQAS3Knp.o
ENTER VALUES FOR MATRIX A:
1   2   3
4   5   6

ENTER VALUES FOR MATRIX B:
7   8   9
10  11  12
The new matrix (Sum of two above matrix) is:
8   10  12
14  16  18
```

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

Code: -

```
#include <stdio.h>
int main()
{
        char str[100],strr[100];
        int i;
        printf("Enter string str1\n");
        scanf("%s",str);
        printf("Enter string str1\n");
        scanf("%s",strr);
        for(i=0;str[i]!='\0';i++)
        {
                strr[i] = str[i];
        }
        strr[i]='\0';
        printf("Copied String(str2) is %s and its length is %d",strr,i);
        return 0;
}
```

Output: -

```
Output
/tmp/X3rQAS3Knp.o
Enter string str1
banglore
Enter string str1
mysore
Copied String(str2) is banglore and its length is 8
```

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.

Code: -

```
#include <stdio.h>
struct student
{
        int roll;
        char name[20];
        char section[20];
        int result;
        int fees;
        char dep[20];
};
struct student getinfo();
void print(struct student s1);
int main()
{
        struct student s1,s2;
        printf("Enter details of first student");
        s1 = getinfo();
        printf("Enter details of second student");
        s2 = getinfo();
        if(s1.result>s2.result)
{
        print(s1);
        }
        else
{
                print(s2);
        }
        return 0;
}
struct student getinfo()
{
        struct student s1;
        printf("\nRoll No: - ");
```

```
                scanf("%d",&s1.roll);
                printf("Name: -");
                fgets(s1.name,20, stdin);
                printf("Section: -");
                fgets(s1.section,20, stdin);
                printf("Result:- ");
                scanf("%d",&s1.result);
                printf("Fees: - ");
                scanf("%d",&s1.fees);
                printf("Department:-");
                fgets(s1.dep,20, stdin);
                printf("\n");
                return s1;
}
void print(struct student s1)
{
                printf(">Roll No: - %d \n",s1.roll);
                printf(">Name: -%s\n",s1.name);
                printf(">Section: %s-\n",s1.section);
                printf(">Result:- %d\n",&s1.result);
                printf(">Fees: - %d\n",&s1.fees);
                printf(">Department:- %s\n",s1.dep);
}
```

Output: -

```
Output

/tmp/hqaGOT9x3v.o
Enter details of first student
Roll No: 1
Name: sumit
Section: CN
Result:- 38
Fees: - 1500
Department:- ISE

Enter details of second studentRoll No: - 2
Name: -meet
Section: CG
Result:- 35
Fees: - 2500
Department:- CSE

Details of student with highest marks are:
>Roll No: 1
>Name: sumit
>Section: CN
>Result:- 38
>Fees: - 1500
>Department:- ISE
```

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

Code: -

```
#include<stdio.h>
void addition ( int *a, int *b, int *c);
void subtraction(int *a, int *b, int *c);
void multiplication(int *a, int *b, int *c);
void remainder(int *a, int *b, int *c);
void divide(int *a, int *b, double *c);
int main()
{
	int a, b, add, sub, mult, remain;
	double divi;
	printf("Enter value of a: ");
	scanf("%d", &a);
	printf("Enter value of b: ");
	scanf("%d", &b);
	addition(&a,&b,&add);
	printf("\n a + b = %d", add);
	subtraction(&a,&b,&sub);
	printf("\n a - b = %d", sub);
	multiplication(&a,&b,&mult);
	printf("\n a * b = %d", mult);
	remainder(&a,&b,&remain);
	printf("\n a % b = %d", remain);
	divide(&a,&b,&divi);
	printf("\n a / b = %.2f", divi);
	return 0;
}
void addition(int *a, int *b, int *c)
{
	*c = *a + *b;
}
void subtraction(int *a, int *b, int *c)
{
```

```
        *c = *a - *b;
    }
void multiplication(int *a, int *b, int *c)
{
        *c = *a * *b;
}
void remainder(int *a, int *b, int *c)
{
        *c = *a % *b;
}
void divide(int *a, int *b, double *c)
{
        *c = (double)*a / *b;
}
```

Output: -