VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama", Belgaum -590014, Karnataka.

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

B.M.S. COLLEGE OF ENGINEERING

(Autonomous Institution under VTU)

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B.M.S. COLLEGE OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

DECALARATION

I,Tushar sharma , 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.

TUSHAR SHARMA (1BM20CS175)

1.) C program to convert degrees Fahrenheit into degrees celsius.

Program code-

```
#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;
}
```

Output-

main.c

```c

#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;
}
```

input

```
Enter a temp in fah:
79
79.00°F is same as 26.11°C

...Program finished with exit code 0
Press ENTER to exit console.
```

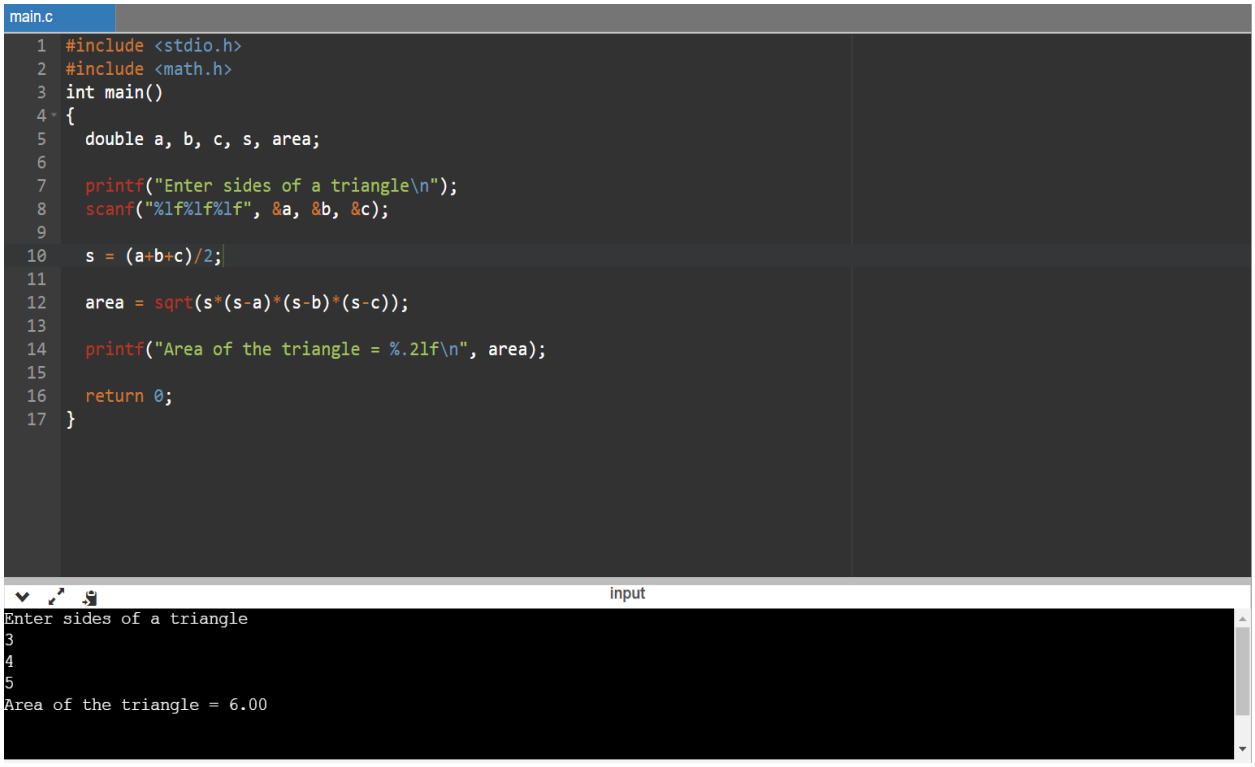
2.)C program to find the area of a triangle given its sides as input using functions.

Program code –

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

```
  double a, b, c, s, area;

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

  s = (a+b+c)/2; // Semiperimeter

  area = sqrt(s*(s-a)*(s-b)*(s-c));

  printf("Area of the triangle = %.2lf\n", area);

  return 0;
}
```

Output-



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

Program code-

```
#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; \n", root1, root2);
      printf("roots are real and unequal");
   }

   else if (discriminant == 0) {
      root1 = root2 = -b / (2 * a);
      printf("root1 = root2 = %.2lf;\n", root1);
      printf("roots are real and equal");
   }

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

```
    }

    return 0;
}
```

Output-

main.c

```c

#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; \n", root1, root2);
        printf("roots are real and unequal");
    }

    else if (discriminant == 0) {
        root1 = root2 = -b / (2 * a);
        printf("root1 = root2 = %.2lf;\n", root1);
        printf("roots are real and equal");
    }
```

input

```
Enter coefficients a, b and c: 1
-5
-14
root1 = 7.00 and root2 = -2.00;
roots are real and unequal

...Program finished with exit code 0
```

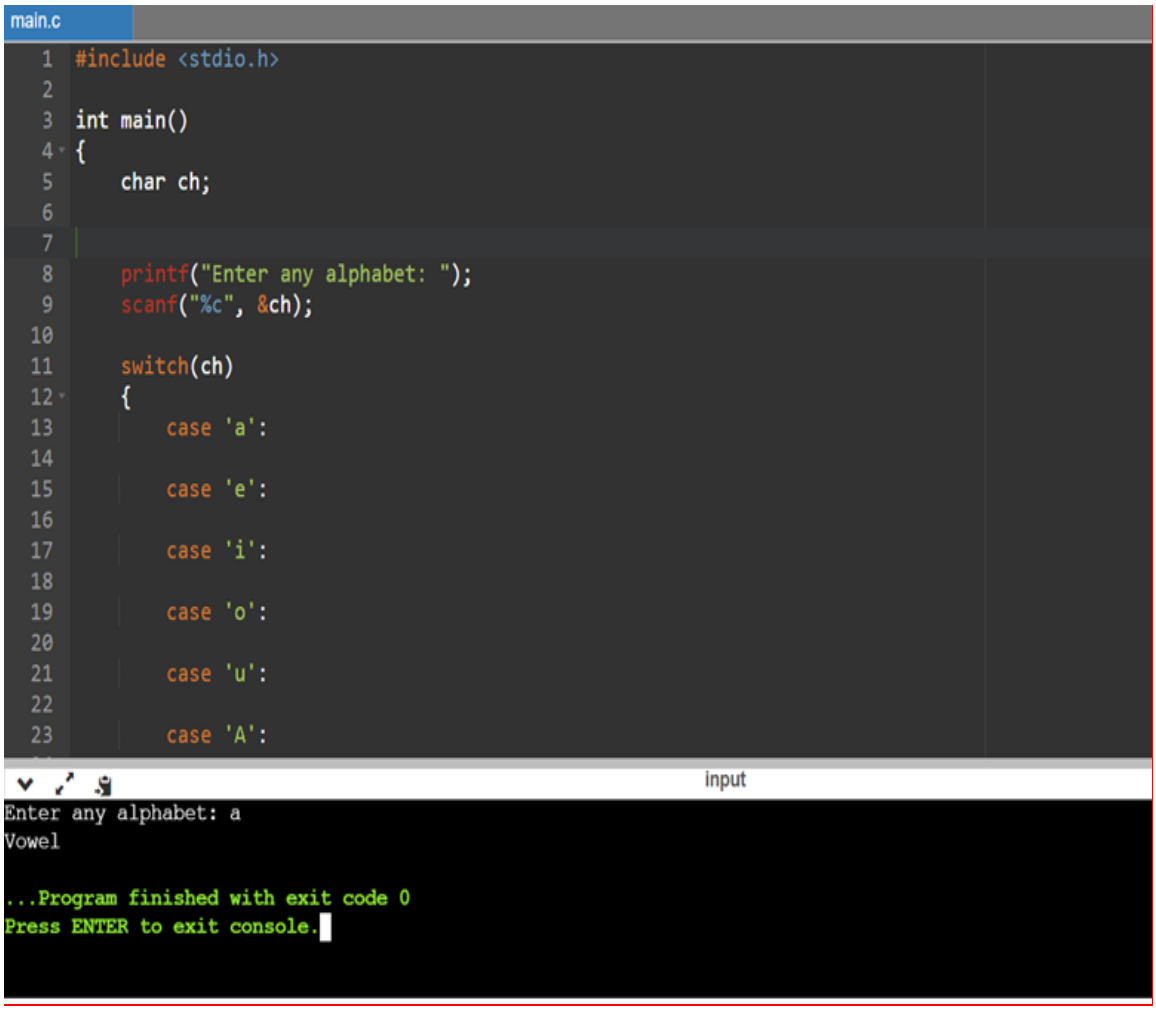
4.)C program to determine whether the entered character is a vowel or consonant using switch case statement.

Program code-

```
#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;
}
```

Output-



5.)C program to print even numbers from M to N.

Program code-

```
#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;

  }
```

Output-

main.c

```c
#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;

```

input

```
   Give the First number for the Range :
2
   Give the Final number for the Range :
12

 The Even numbers between 2 and 12 are
  2
  4
  6
  8
  10
  12

...Program finished with exit code 0
```

6.)C program to calculate the sum of squares of first n odd numbers.

Program code-

```
#include <stdio.h>
int main() {
  int n,sum;
  printf("Enter the value of N \n");
  scanf("%d",&n);
   sum = ((n*((4*n*n)-1))/3);
  printf("The sum of square of first %d odd numbers is %d",n, sum);
  return 0;
}
```

Output-

main.c

```c
#include <stdio.h>
int main() {
   int n,sum;
   printf("Enter the value of N \n");
   scanf("%d",&n);
    sum = ((n*((4*n*n)-1))/3);
   printf("The sum of square of first %d odd numbers is %d",n, sum);
   return 0;
}
```

input

```
Enter the value of N
6
The sum of square of first 6 odd numbers is 286

...Program finished with exit code 0
Press ENTER to exit console.
```

7.)C program to perform addition of two matrices

Program code-

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

{
   printf("enter the size of matrix \n");
   printf("\n enter the number of rows\n");
   scanf("%d",&x);
   printf("\n enter the number of columns\n");
   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 SUM OF MATRIX A AND B IS:\n");
    for(i=0;i<x;i++)
     {
            for(j=0;j<y;j++)
                    printf("%5d",c[i][j]);
            printf("\n");
    }
```

```
    getch();
}
```

output-

main.c

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

input

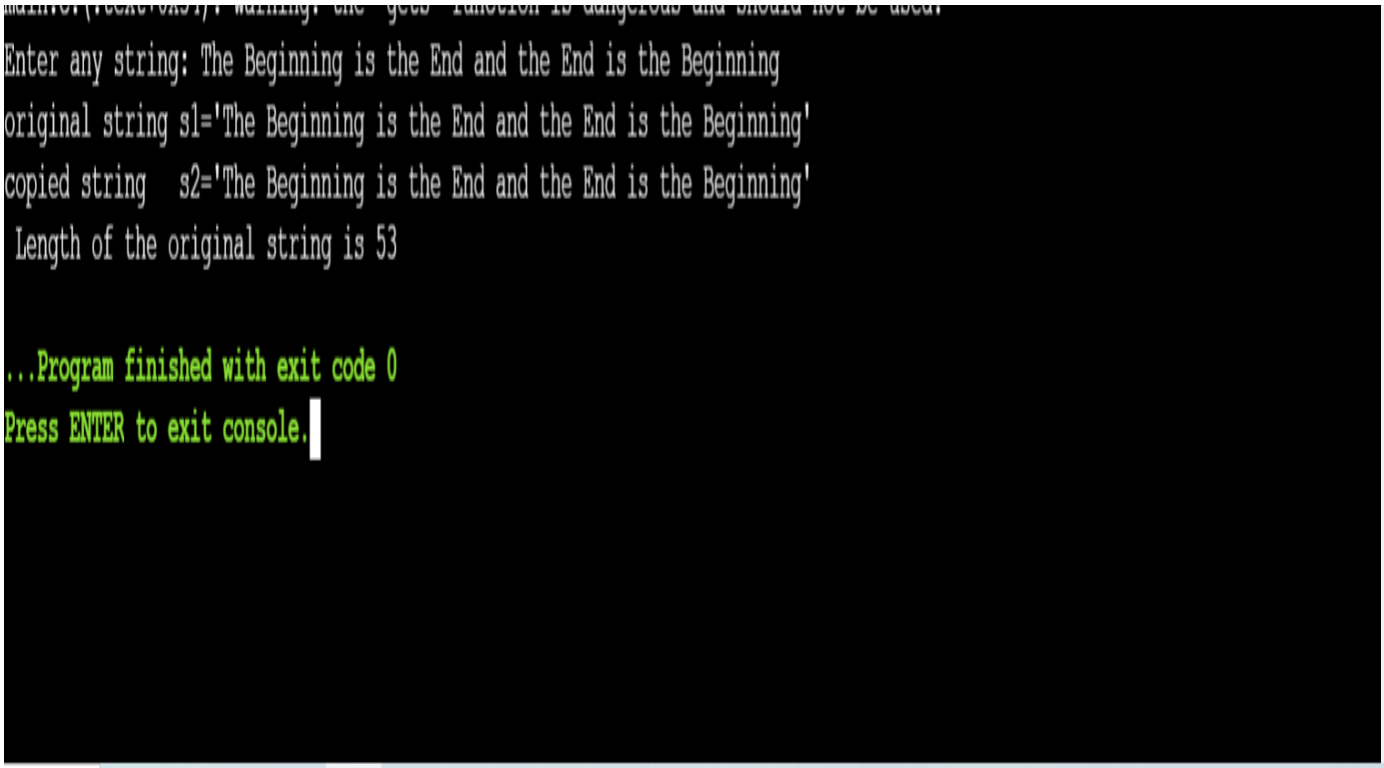
```
enter the size of matrix

 enter the number of rows
3

 enter the number of columns
3

ENTER VALUES FOR MATRIX A:
1 2 3
4 5 6
7 8 9

ENTER VALUES FOR MATRIX B:
0 5 7
8 9 9
1 2 3

THE SUM OF MATRIX A AND B IS:
    1    7   10
   12   14   15
    8   10   12


...Program finished with exit code 0
Press ENTER to exit console.
```

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

Program code-

```
#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;
}
```

Output-


Enter any string: The Beginning is the End and the End is the Beginning
original string s1='The Beginning is the End and the End is the Beginning'
copied string s2='The Beginning is the End and the End is the Beginning'
Length of the original string is 53
...Program finished with exit code 0
Press ENTER to exit console.

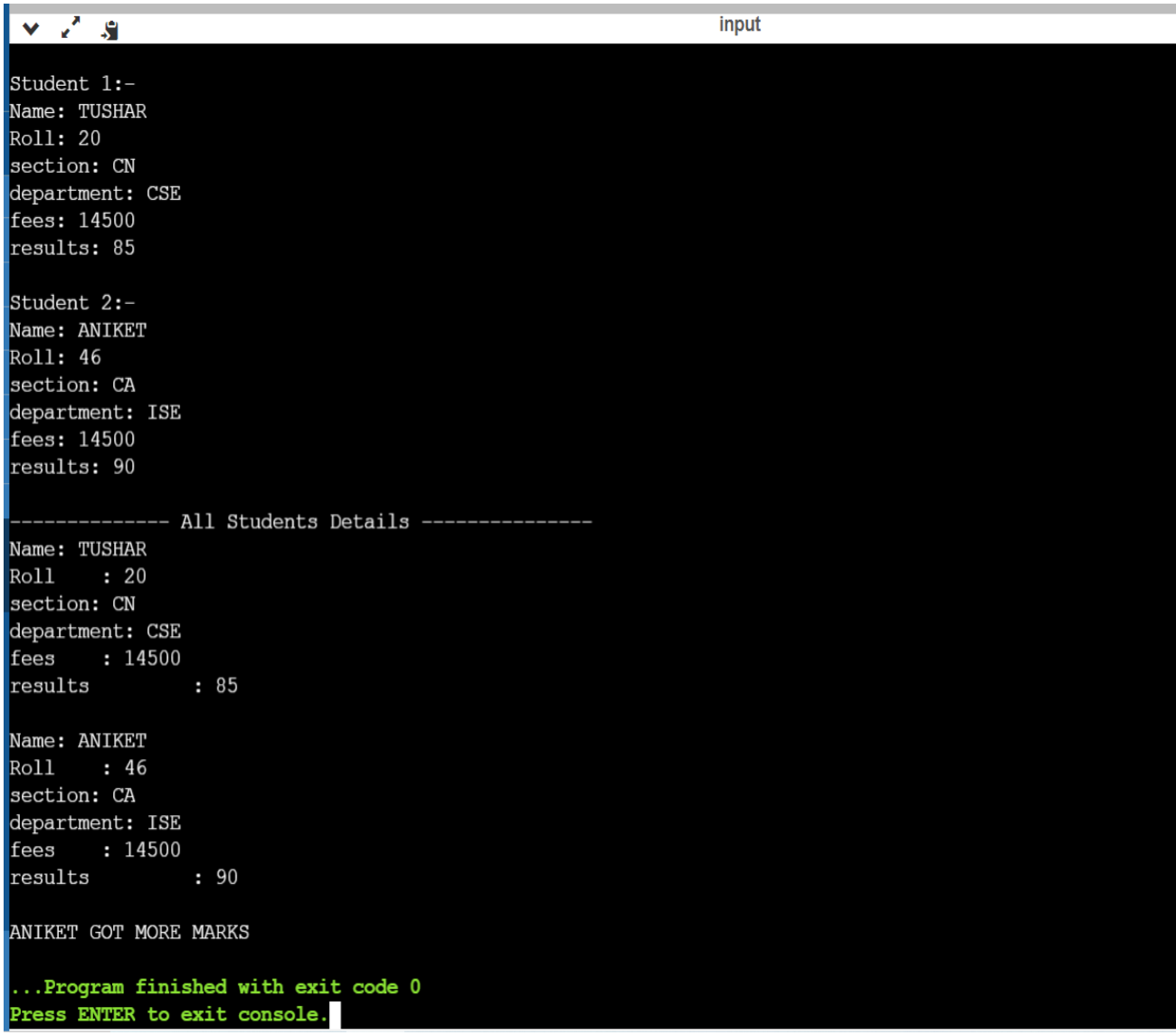
9.) C program to create student structure, read two student details(roll number, name, section, department, fees, and results i.e., total marks obtained)and print the student details who has scored the highest.

Program code-

```
#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;
}
```

Output-


input
Student 1:-
Name: TUSHAR
Roll: 20
section: CN
department: CSE
fees: 14500
results: 85
Student 2:-
Name: ANIKET
Roll: 46
section: CA
department: ISE
fees: 14500
results: 90
---------- All Students Details ----------
Name: TUSHAR
Roll : 20
section: CN
department: CSE
fees : 14500
results : 85
Name: ANIKET
Roll : 46
section: CA
department: ISE
fees : 14500
results : 90
ANIKET GOT MORE MARKS
...Program finished with exit code 0
Press ENTER to exit console.

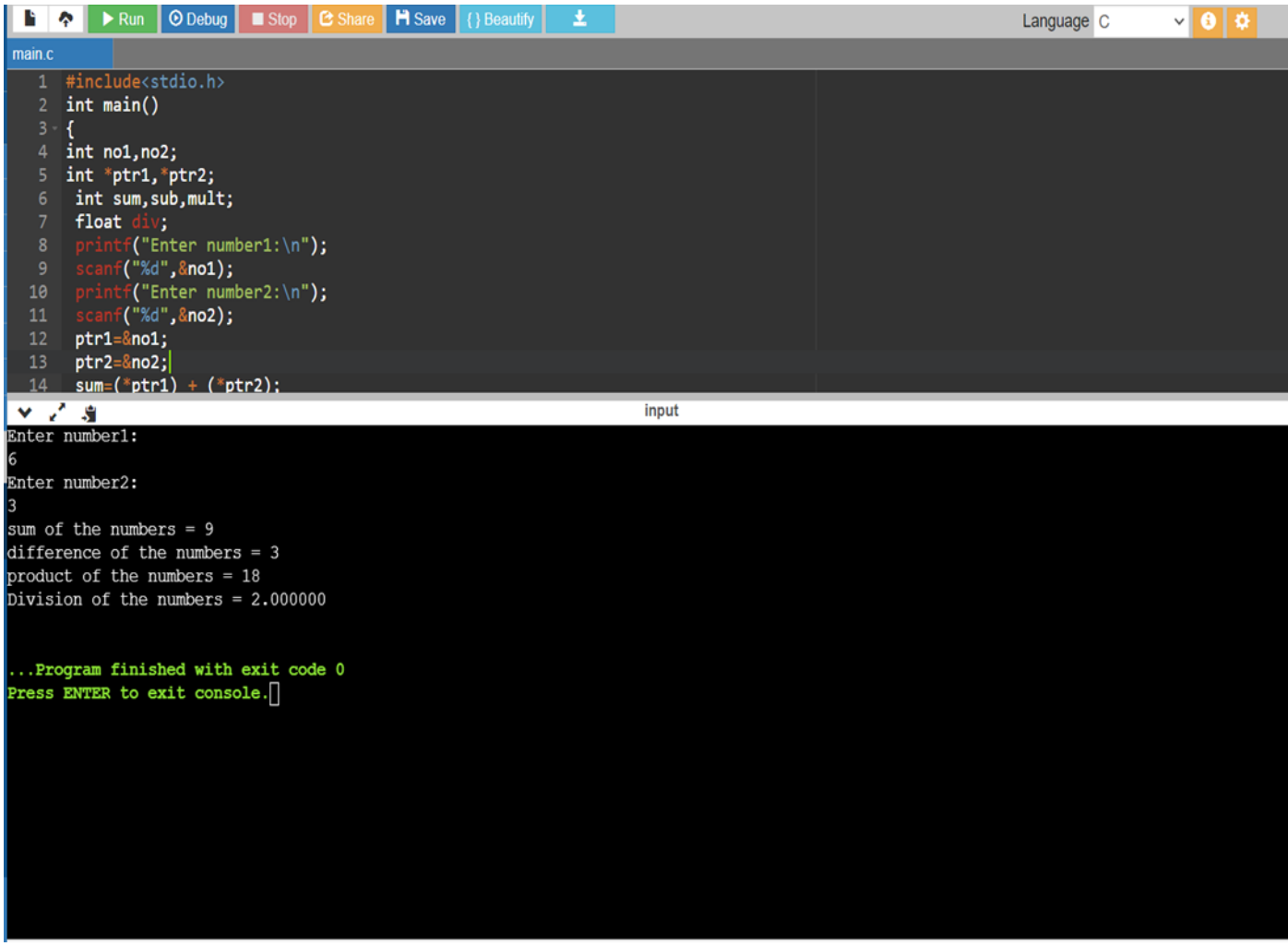
10.) C program to perform arithmetic operations (addition, subtraction,multiplication, division and remainder) on two integers using pointers.

Program code-

```
#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 of the numbers = %d\n",sum);
 printf("difference of the numbers = %d\n",sub);
 printf("product of the numbers = %d\n",mult);
 printf("Division of the numbers = %f\n",div);
 return 0;
}
```

Output-


Run
Debug
Stop
Share
Save
{ } Beautify
Language C
main.c
#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);
input
Enter number1:
6
Enter number2:
3
sum of the numbers = 9
difference of the numbers = 3
product of the numbers = 18
Division of the numbers = 2.000000
...Program finished with exit code 0
Press ENTER to exit console.

11 .) program to illustrate pointers in swapping two numbers.

Program code-

```
#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;
}
```

Output-

main.c

```c
#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;
}
```

input

```
Enter value of num1: 20
Enter value of num2: 30
Before Swapping: num1 is: 20, num2 is: 30
After Swapping: num1 is: 30, num2 is: 20


...Program finished with exit code 0
Press ENTER to exit console.
```

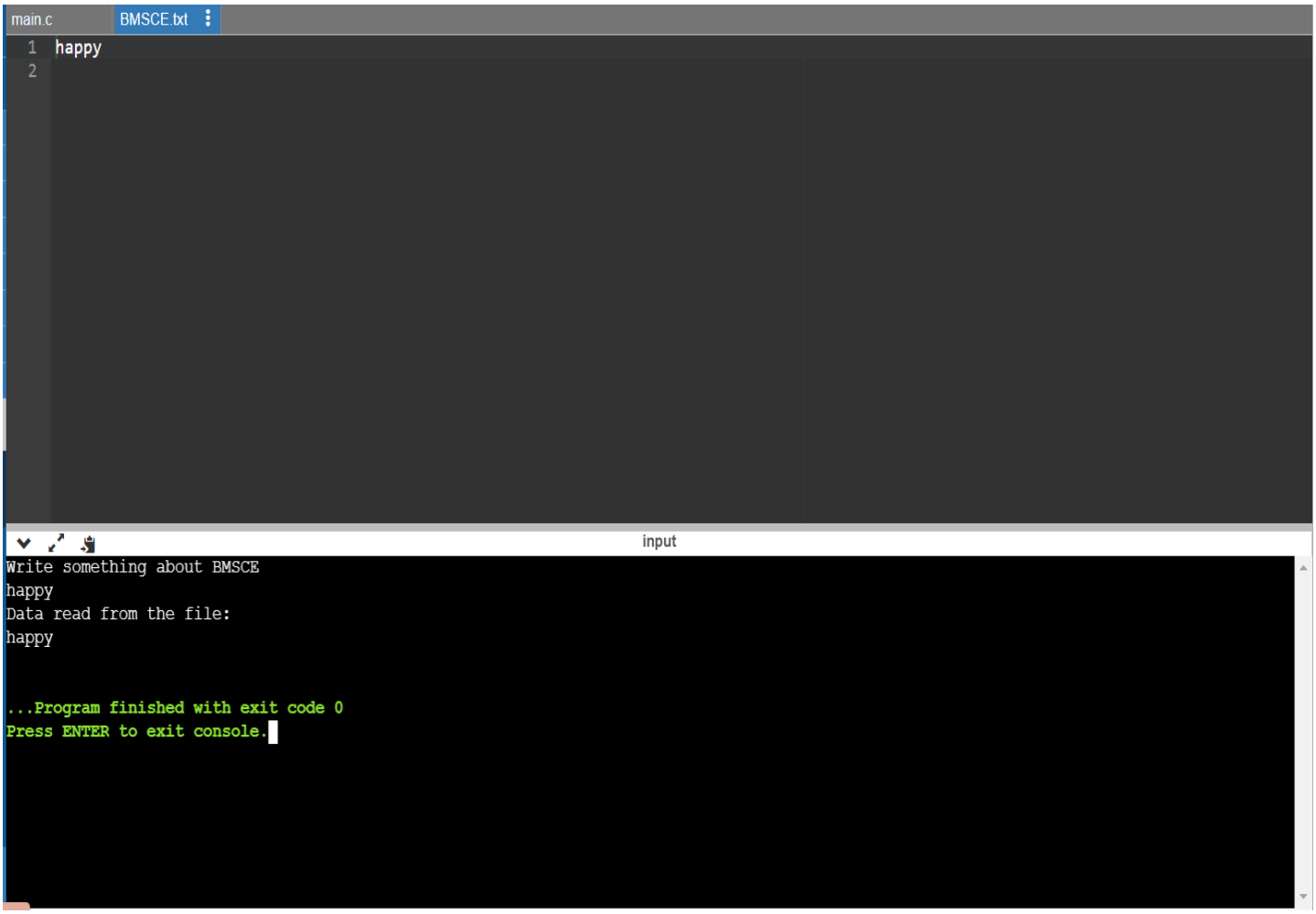
12.) Demonstrate how to read data from the keyboard, write it to a file called BMSCE,again read the same data from the BMSCE file,and display it on the screen/console.

Program code-

```
#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;

}
```

Output-


main.c
BMSCE.txt
1 happy
2
input
Write something about BMSCE
happy
Data read from the file:
happy
...Program finished with exit code 0
Press ENTER to exit console.

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