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“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

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B.M.S. COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING



DECLARATION

I **Ashish Harakuni**, 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. Lohit.I.J** 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 developed report here is not from part of any other report by any other students.

ASHISH.C.HARAKUNI (1BM20CS025)

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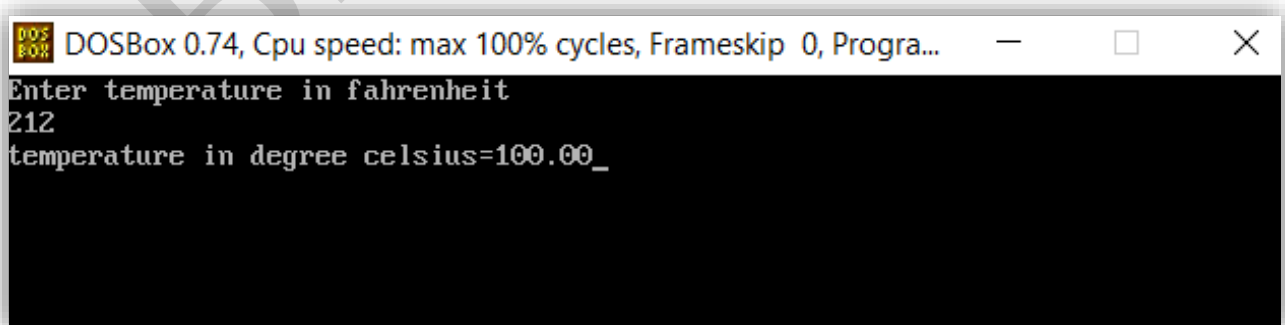
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IBM20CS025

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

```
#include<stdio.h>
#include<conio.h>
void main()
{
    float faren,deg;
    clrscr();
    printf("Enter temperature in fahrenheit\n");
    scanf("%f",&faren);
    deg=(faren-32.0)*5/9;
    printf("temperature in degree celsius=%.2f",deg);
    getch();
}
```

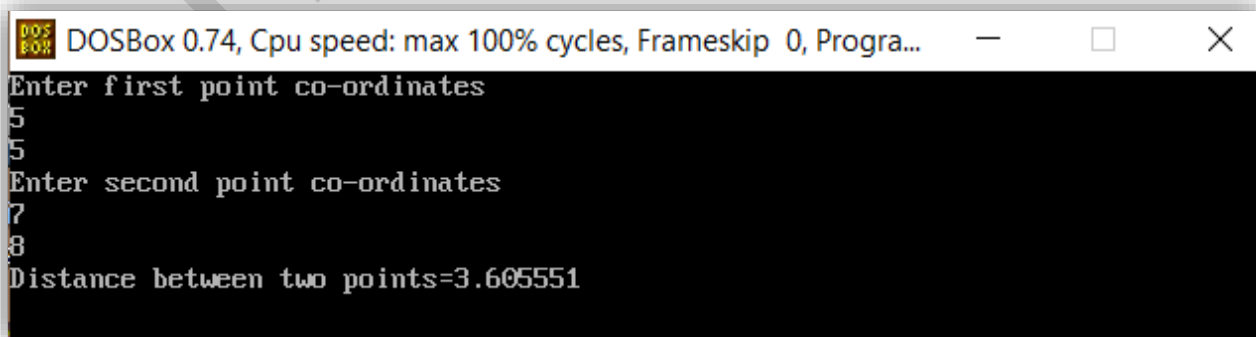
OUTPUT:



2. Implement a C program to find distance between two points.

```
//program to find distance between to points.
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    float x1,y1,x2,y2,dist;
    clrscr();
    printf("Enter first point co-ordinates\n");
    scanf("%f%f",&x1,&y1);
    printf("Enter second point co-ordinates\n");
    scanf("%f%f",&x2,&y2);
    dist=sqrt(pow(x2-x1,2)+pow(y2-y1,2));
    printf("Distance between two points=%f",dist);
    getch();
}
```

OUTPUT:

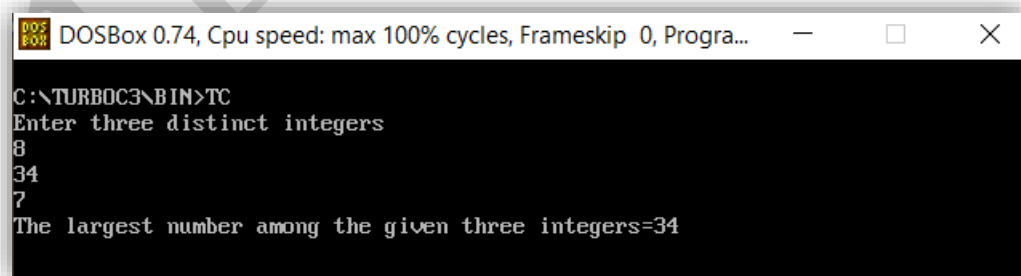


```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter first point co-ordinates
5
5
Enter second point co-ordinates
7
8
Distance between two points=3.605551
```

3. Develop a C program to find largest among the given 3 integers.

```
#include<stdio.h>
#include<conio.h>
int large(int,int,int);
void main()
{
    int a,b,c;
    printf("Enter three distinct integers\n");
    scanf("%d%d%d",&a,&b,&c);
    printf("The largest number among the given three integers=%d",large(a,b,c));
    getch();
}
int large(int a,int b,int c)
{
    int lar;
    lar=a>b?(a>c?a:c):(b>c?b:c);
    return lar;
}
```

OUTPUT:



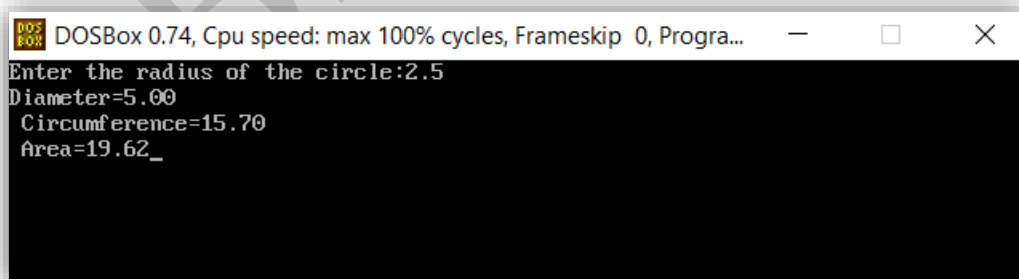
```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
C:\TURBOC3\BIN>TC
Enter three distinct integers
8
34
7
The largest number among the given three integers=34
```


4. Develop a C program to calculate diameter, circumference, area of the circle if radius is given.

```
#include<stdio.h>
#include<conio.h>
#define pi 3.14
void main()
{ float ra,dia,circum,area;
  printf("Enter the radius of the circle:");
  scanf("%f",&ra);

  dia=(2*ra);
  circum=(2*pi*ra);
  area=(pi*ra*ra);
  printf("Diameter=%.2f\n Circumference=%.2f\n Area=%.2f",dia,circum,area);
  getch();
}
```

OUTPUT:

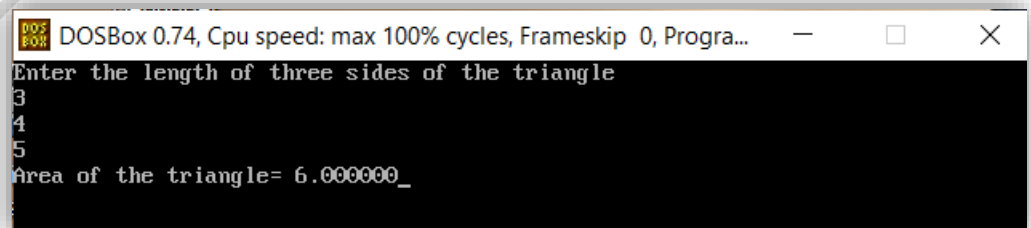


```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the radius of the circle:2.5
Diameter=5.00
Circumference=15.70
Area=19.62_
```

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

```
//Area of triangle using its sides lengths(using user defined functions)
#include<stdio.h>
#include<conio.h>
#include<math.h>
float area(float,float,float); //func declaration
void main()
{
    float a,b,c,ar;
    clrscr();
    printf("Enter the length of three sides of the triangle\n");
    scanf("%f%f%f",&a,&b,&c);
    ar=area(a,b,c); //func call
    printf("Area of the triangle= %f",ar);
    getch();
}
float area(float a,float b,float c) //func defn
{ float s,area;
  s=(a+b+c)/2.0;
  area=sqrt(s*(s-a)*(s-b)*(s-c));
  return area;
}
```

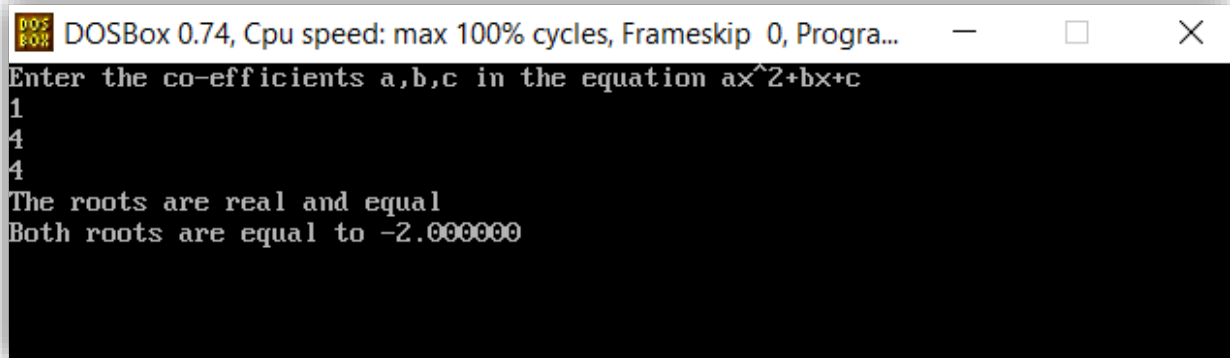
OUTPUT:



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

```
#include<stdio.h>
#include<conio.h>
#include<math.h>
void main()
{
    float a,b,c,x1,x2,x,d,rp,ip;
    clrscr();
    printf("Enter the co-efficients a,b,c in the equation ax^2+bx+c\n");
    scanf("%f%f%f",&a,&b,&c);
    d=(b*b)-4*a*c;
    if(d>0)
    { printf("Roots are real and distinct\n");
      x1=(-b+sqrt(d))/2*a;
      x2=(-b-sqrt(d))/2*a;
      printf("The roots of the equation are x1=%f and x2=%f\n",x1,x2);
    }
    else if(d==0)
    { printf("The roots are real and equal\n");
      x=(-b)/2*a;
      printf("Both roots are equal to %f",x);
    }
    else
    { printf("The roots are imaginary and distinct\n");
      rp=(-b)/2*a;
      ip=sqrt(-d)/2*a;
      printf("the roots are %f+%fi and %f-%fi",rp,ip,rp,ip);
    }
    getch();
}
```

OUTPUT:



DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...

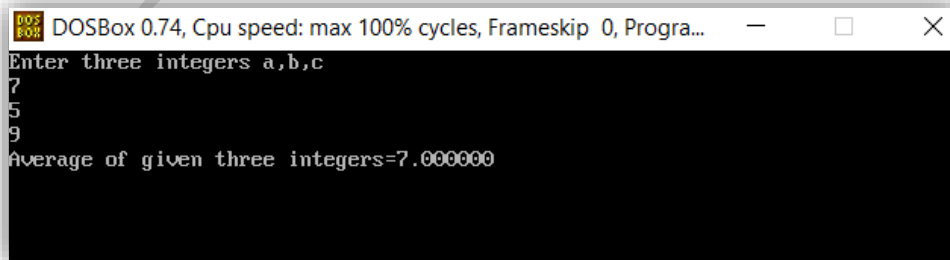
```
Enter the co-efficients a,b,c in the equation ax^2+bx+c
1
4
4
The roots are real and equal
Both roots are equal to -2.000000
```

7. Develop a C program to calculate average of three integers using functions.

```
//program to find average of three integers
#include<stdio.h>
#include<conio.h>
int avg(int a,int b,int c); //func declaration
void main()
{
    int a,b,c;
    float avr;
    clrscr();
    printf("Enter three integers a,b,c\n");
    scanf("%d%d%d",&a,&b,&c);
    avr=avg(a,b,c);    //func call
    printf("Average of given three integers=%f",avr);
    getch();
}

int avg(int a,int b,int c) //func defn
{
    return ((a+b+c)/3.0);
}
```

OUTPUT:

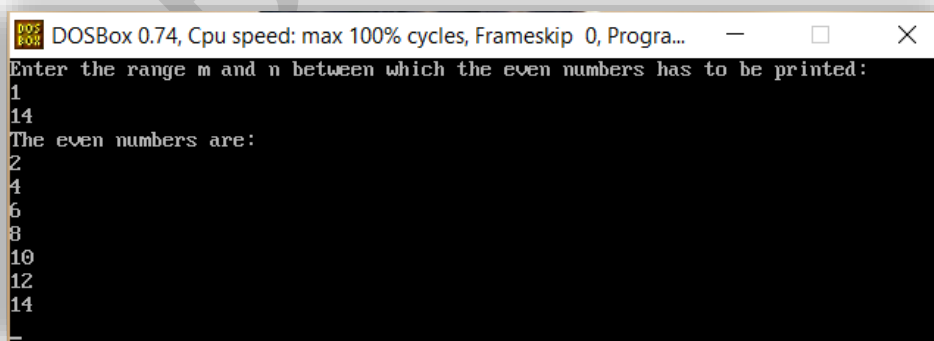


```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter three integers a,b,c
7
5
9
Average of given three integers=7.000000
```

8. Develop a C program to print all even numbers between m and n range.

```
#include<stdio.h>
#include<conio.h>
void main()
{ int m,n,i;
  printf("Enter the range m and n between which the even numbers has to be
printed:\n");
  scanf("%d %d",&m,&n);
  printf("The even numbers are:\n");
  for(i=m;i<=n;i++)
  { if(i%2==0)
    printf("%d\n",i);
    else
    continue;
  }
  getch();
}
```

OUTPUT:

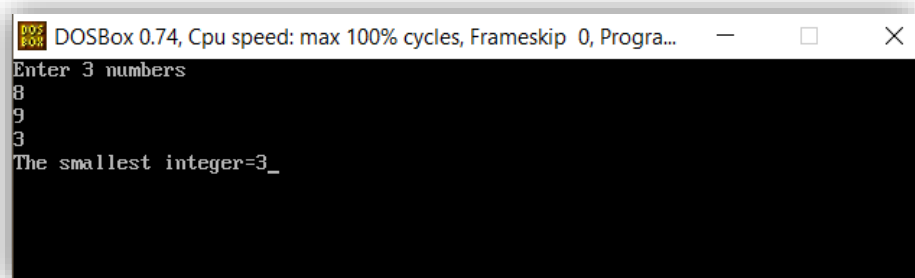


```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the range m and n between which the even numbers has to be printed:
1
14
The even numbers are:
2
4
6
8
10
12
14
_
```

9. Illustrate conditional branching statements to find the smallest of three numbers.

```
#include<stdio.h>
#include<conio.h>
int small(int,int,int);
void main()
{
    int a,b,c;
    clrscr();
    printf("Enter 3 numbers\n");
    scanf("%d%d%d",&a,&b,&c); // Enter only integers
    if(a==b && b==c && c==a)
        printf("all are equal");
    else
        printf("The smallest integer=%d",small(a,b,c));
    getch();
}
int small(int a,int b,int c)
{
    if(a<=b && a<=c)
        return a;
    else if(b<=a && b<=c)
        return b;
    else
        return c;
}
```

OUTPUT:

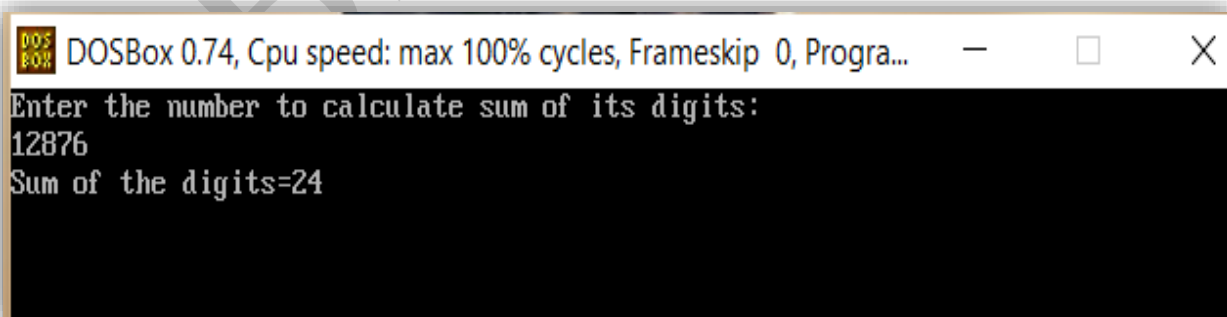
A screenshot of a DOSBox window titled "DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...". The window has a black background with white text. The text shows the program's execution: "Enter 3 numbers", followed by three lines of input (8, 9, 3), and finally "The smallest integer=3_".

```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter 3 numbers
8
9
3
The smallest integer=3_
```

10. Develop a C program to calculate the sum of the digits of the given number.

```
#include<stdio.h>
#include<conio.h>
void main()
{ int num,re,sum=0;
  printf("Enter the number to calculate sum of its digits:\n");
  scanf("%d",&num);
  while(num>0)
  { re=num%10;
    sum+=re;
    num=num/10;
  }
  printf("Sum of the digits=%d",sum);
  getch();
}
```

OUTPUT:



```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the number to calculate sum of its digits:
12876
Sum of the digits=24
```


11. Develop a C program to print the multiples of n from 1 to 100.

```
#include<stdio.h>
#include<conio.h>
void main()
{ int n,i;
  printf("Enter the number:\n");
  scanf("%d",&n);
  printf("Multiples of %d from 1 to 100 are:\n",n);
  for(i=1;i<=100;i++)
  { printf("%d * %d = %d\n",n,i,(n*i));
  }
  getch();
}
```

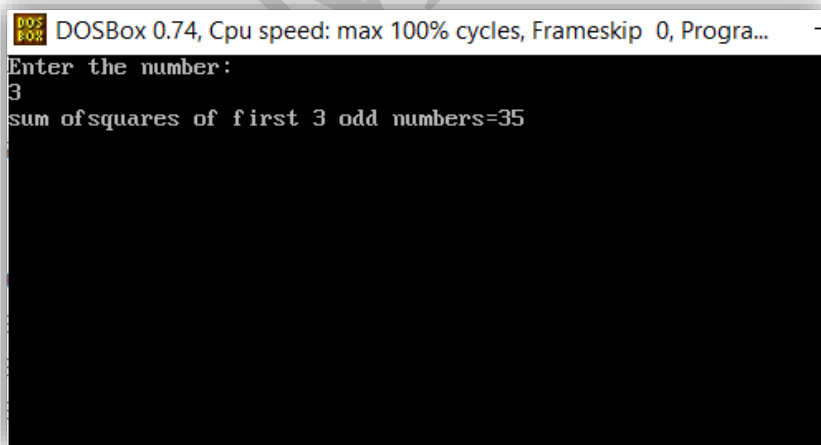
OUTPUT:

```
Enter the number:
14
Multiples of 14 from 1 to 100 are:
14 * 1 = 14
14 * 2 = 28
14 * 3 = 42
14 * 4 = 56
14 * 5 = 70
14 * 6 = 84
14 * 7 = 98
14 * 8 = 112
14 * 9 = 126
14 * 10 = 140
14 * 11 = 154
14 * 12 = 168
14 * 13 = 182
14 * 14 = 196
14 * 15 = 210
14 * 16 = 224
14 * 17 = 238
14 * 18 = 252
14 * 19 = 266
14 * 20 = 280
14 * 21 = 294
14 * 22 = 308
14 * 23 = 322
14 * 24 = 336
14 * 25 = 350
14 * 26 = 364
14 * 27 = 378
14 * 28 = 392
14 * 29 = 406
14 * 30 = 420
14 * 31 = 434
14 * 32 = 448
14 * 33 = 462
14 * 34 = 476
14 * 35 = 490
14 * 36 = 504
14 * 37 = 518
14 * 38 = 532
14 * 39 = 546
14 * 40 = 560
14 * 41 = 574
14 * 42 = 588
14 * 43 = 602
14 * 44 = 616
14 * 45 = 630
14 * 46 = 644
14 * 47 = 658
14 * 48 = 672
14 * 49 = 686
14 * 50 = 700
14 * 51 = 714
14 * 52 = 728
14 * 53 = 742
14 * 54 = 756
14 * 55 = 770
14 * 56 = 784
14 * 57 = 798
14 * 58 = 812
14 * 59 = 826
14 * 60 = 840
14 * 61 = 854
14 * 62 = 868
14 * 63 = 882
14 * 64 = 896
14 * 65 = 910
14 * 66 = 924
14 * 67 = 938
14 * 68 = 952
14 * 69 = 966
14 * 70 = 980
14 * 71 = 994
14 * 72 = 1008
14 * 73 = 1022
14 * 74 = 1036
14 * 75 = 1050
14 * 76 = 1064
14 * 77 = 1078
14 * 78 = 1092
14 * 79 = 1106
14 * 80 = 1120
14 * 81 = 1134
14 * 82 = 1148
14 * 83 = 1162
14 * 84 = 1176
14 * 85 = 1190
14 * 86 = 1204
14 * 87 = 1218
14 * 88 = 1232
14 * 89 = 1246
14 * 90 = 1260
14 * 91 = 1274
14 * 92 = 1288
14 * 93 = 1302
14 * 94 = 1316
14 * 95 = 1330
14 * 96 = 1344
14 * 97 = 1358
14 * 98 = 1372
14 * 99 = 1386
14 * 100 = 1400
...Program finished with exit code 0
Press ENTER to exit console.
```

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

```
#include<stdio.h>
#include<conio.h>
void main()
{ int n,i,sum=0;
  printf("Enter the number upto which the sum of squares of odd numbers has
to be calculated:\n");
  scanf("%d",&n);
  for(i=1;i<(2*n);i+=2)
  { sum=sum+(i*i);
  }
  printf("sum of squares of first %d odd numbers=%d",n,sum);
  getch();
}
```

OUTPUT:



```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the number:
3
sum of squares of first 3 odd numbers=35
```

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

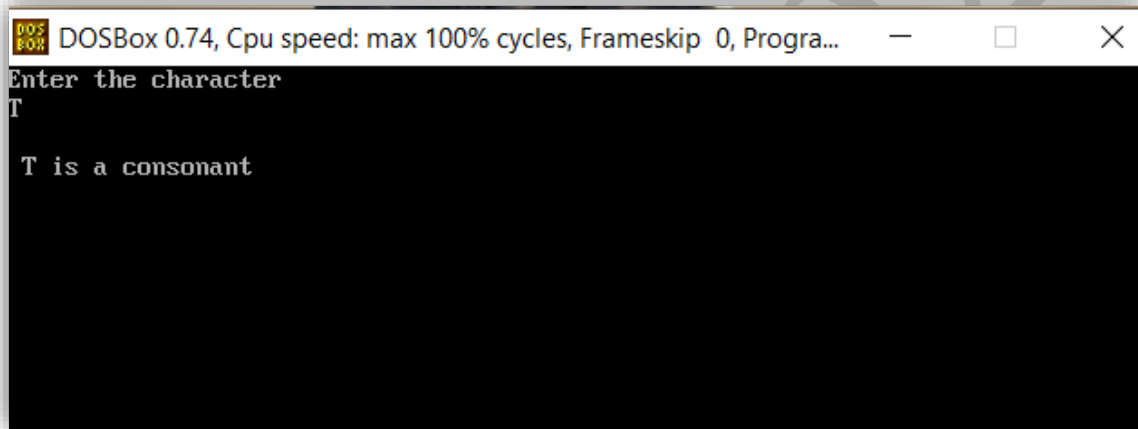
```
#include<stdio.h>
#include<conio.h>
int vowel_check(char);
void main()
{
    char ch;
    clrscr();
    printf("Enter the character\n");
    scanf("%c",&ch);
    printf(" %c",vowel_check(ch));
    getch();
}
int vowel_check(char ch)
{
    switch(ch)
    {
        case'A':
        case'a':
        case'E':
        case'e':
        case'I':
        case'i':
        case'O':
        case'o':
        case'U':
        case'u':
            printf(" \n %c is vowel",ch);
            break;
        default: printf("\n %c is a consonant",ch);
    }
}
```

```
return 0;
```

```
}
```

```
}
```

OUTPUT:

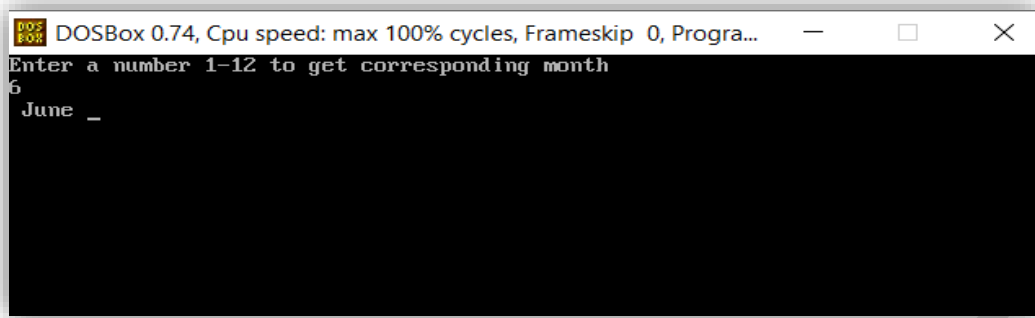


14. Develop a C program to print the corresponding month if number is given as input using switch case statement.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int n;
    clrscr();
    printf("Enter a number 1-12 to get corresponding month\n");
    scanf("%d",&n);
    printf("%c",month(n));
    getch();
}
int month(int n)
{
    switch(n)
    {
        case 1:
        { printf(" January");}
        break;
        case 2:
        printf(" February");
        break;
        case 3:
        printf(" March");
        break;
        case 4:
        printf(" April");
        break;
        case 5:
        printf(" may");
```

```
        break;
    case 6:
        printf(" June");
        break;
    case 7:
        printf(" July");
        break;
    case 8:
        printf(" August");
        break;
    case 9:
        printf(" September");
        break;
    case 10:
        printf(" October");
        break;
    case 11:
        printf(" November");
        break;
    case 12:
        printf(" December");
        break;
    default:
        printf("wrong input");
    }
    return 0;
    getch();
}
```

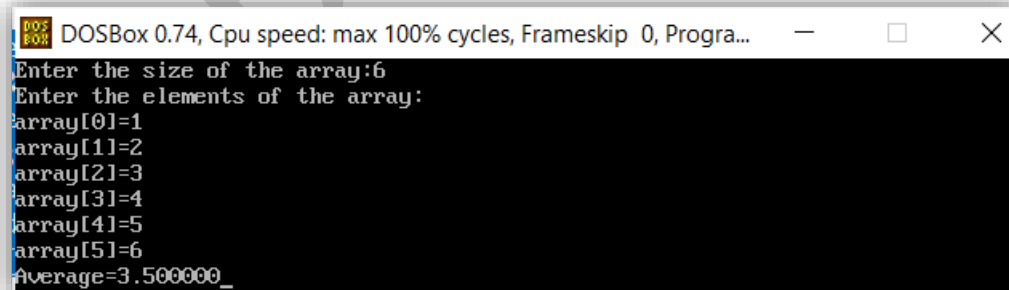
OUTPUT:



15. Develop a C program to calculate average of elements given in an array.

```
#include<stdio.h>
#include<conio.h>
void main()
{ int n,i,arr[30],sum=0;
  float avg;
  printf("Enter the size of the array:");
  scanf("%d",&n);
  printf("Enter the elements of the array:\n");
  for(i=0;i<n;i++)
  { printf("array[%d]=",i);
    scanf("%d",&arr[i]);
    sum+=arr[i];
  }
  avg=(float) sum/n;
  printf("Average=%f",avg);
  getch();
}
```

OUTPUT:



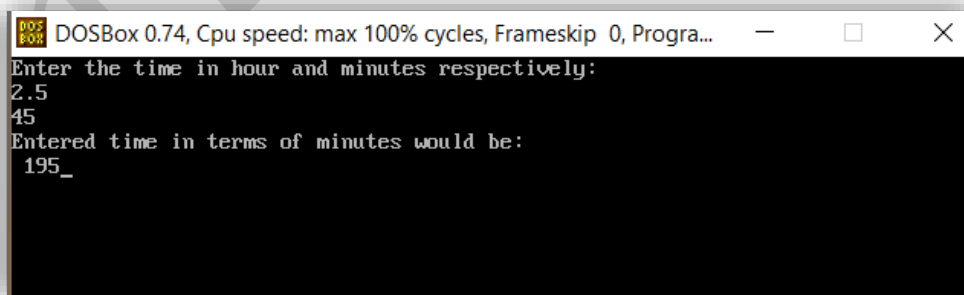
The screenshot shows a DOSBox window titled "DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...". The command prompt displays the following text:

```
Enter the size of the array:6
Enter the elements of the array:
array[0]=1
array[1]=2
array[2]=3
array[3]=4
array[4]=5
array[5]=6
Average=3.500000_
```


16. Develop a C program to calculate total time in minutes if hours and minutes are given as input.

```
#include<stdio.h>
#include<conio.h>
int time(float,int);
void main()
{ int min;
  float hr;
  clrscr();
  printf("Enter the time in hour and minutes respectively:\n");
  scanf("%f %d",&hr,&min);
  printf("Entered time in terms of minutes would be:\n %d",time(hr,min));
  getch();
}
int time(float hr,int min)
{ int total_mins;
  total_mins=(hr*60)+min;
  return total_mins;
}
```

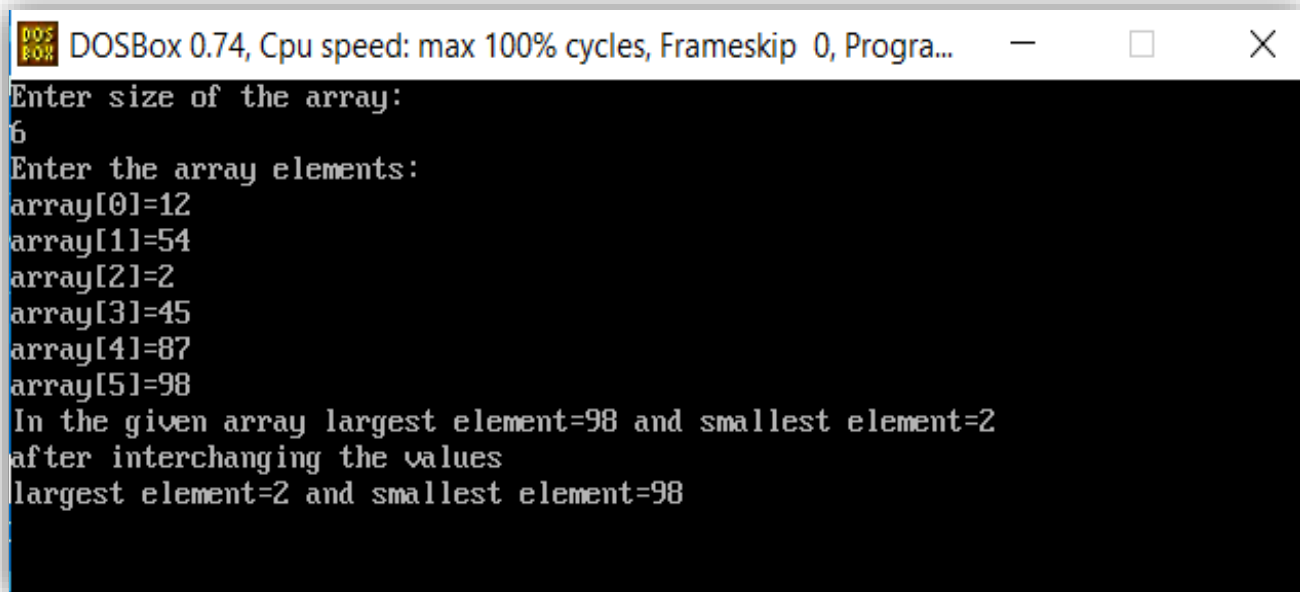
OUTPUT:



17. Program to interchange the largest and smallest element in the given array.

```
#include<stdio.h>
#include<conio.h>
void main()
{ int arr[30],i,max,min,n,temp;
  printf("Enter size of the array:\n");
  scanf("%d",&n);
  printf("Enter the array elements:\n");
  for(i=0;i<n;i++)
  { printf("array[%d]=",i);
    scanf("%d",&arr[i]);
  }
  max=arr[0];
  min=arr[0];
  for(i=0;i<n;i++)
  { if(max<arr[i])
    max=arr[i];
    if(min>arr[i])
    min=arr[i];
  }
  printf("In the given array largest element=%d and smallest element=%d\n",max,min);
  printf("after interchanging the values",max,min);
  temp=max;
  max=min;
  min=temp;
  printf("\nlargest element=%d and smallest element=%d",max,min);
  getch();
}
```

OUTPUT:



The screenshot shows a DOSBox window titled "DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...". The window contains a text-based interface for an array program. It prompts the user to "Enter size of the array:", where the number "6" is entered. Then it prompts "Enter the array elements:", followed by six lines of input: "array[0]=12", "array[1]=54", "array[2]=2", "array[3]=45", "array[4]=87", and "array[5]=98". Finally, it displays the output: "In the given array largest element=98 and smallest element=2", "after interchanging the values", and "largest element=2 and smallest element=98".

```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter size of the array:
6
Enter the array elements:
array[0]=12
array[1]=54
array[2]=2
array[3]=45
array[4]=87
array[5]=98
In the given array largest element=98 and smallest element=2
after interchanging the values
largest element=2 and smallest element=98
```

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

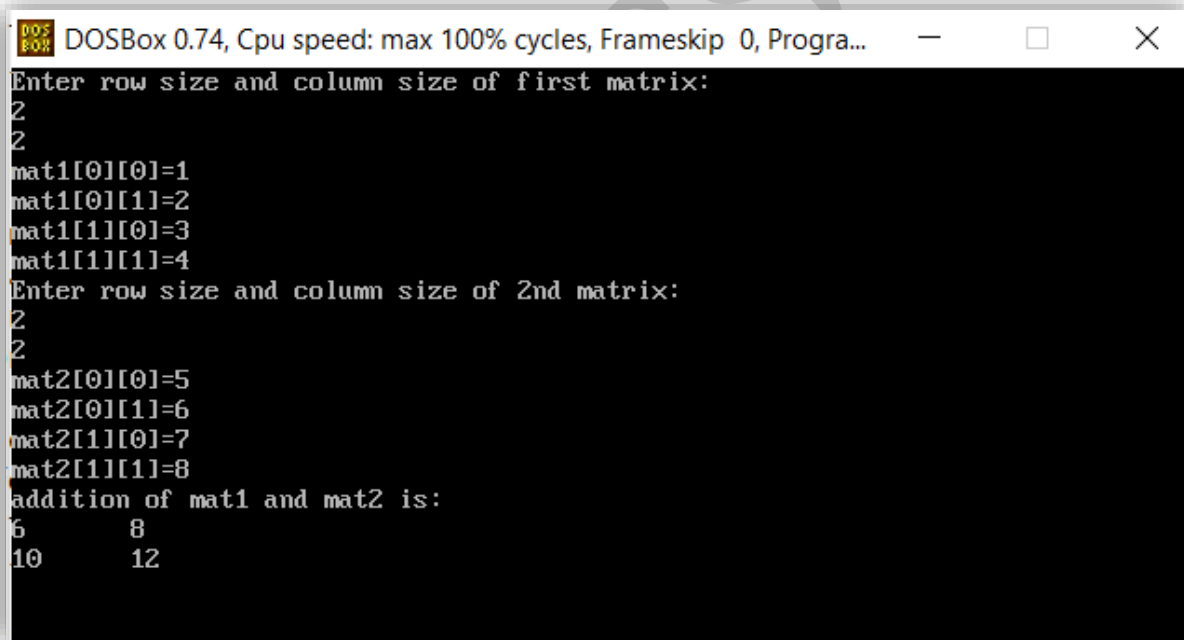
```
// addition of two matrices
#include<stdio.h>
#include<conio.h>
void main()
{ int i,j,mat1[20][20],mat2[20][20],r1,r2,c1,c2,rs,cs,sum[20][20];
  clrscr();
  printf("Enter row size and column size of first matrix:\n");
  scanf("%d %d",&r1,&c1);
  for(i=0;i<r1;i++)
  { for(j=0;j<c1;j++)
    { printf("mat1[%d][%d]=",i,j);
      scanf("%d",&mat1[i][j]);
    }
  }
  printf("Enter row size and column size of 2nd matrix:\n");
  scanf("%d %d",&r2,&c2);
  if(r1!=r2 || c1!=c2)
  { printf("for matrix addition row and column sizes of matrixes should be same
\n please enter valid one");
  }
  else
  { for(i=0;i<r2;i++)
    { for(j=0;j<c2;j++)
      { printf("mat2[%d][%d]=",i,j);
        scanf("%d",&mat2[i][j]);
      }
    }
  } printf("addition of mat1 and mat2 is:\n");
  rs=r1;
  cs=c1;
```

```

for(i=0;i<rs;i++)
{ for(j=0;j<cs;j++)
  { sum[i][j]=mat1[i][j]+mat2[i][j];
    printf("%d \t",sum[i][j]);
  }printf("\n");
}
}
getch();
}

```

OUTPUT:



```

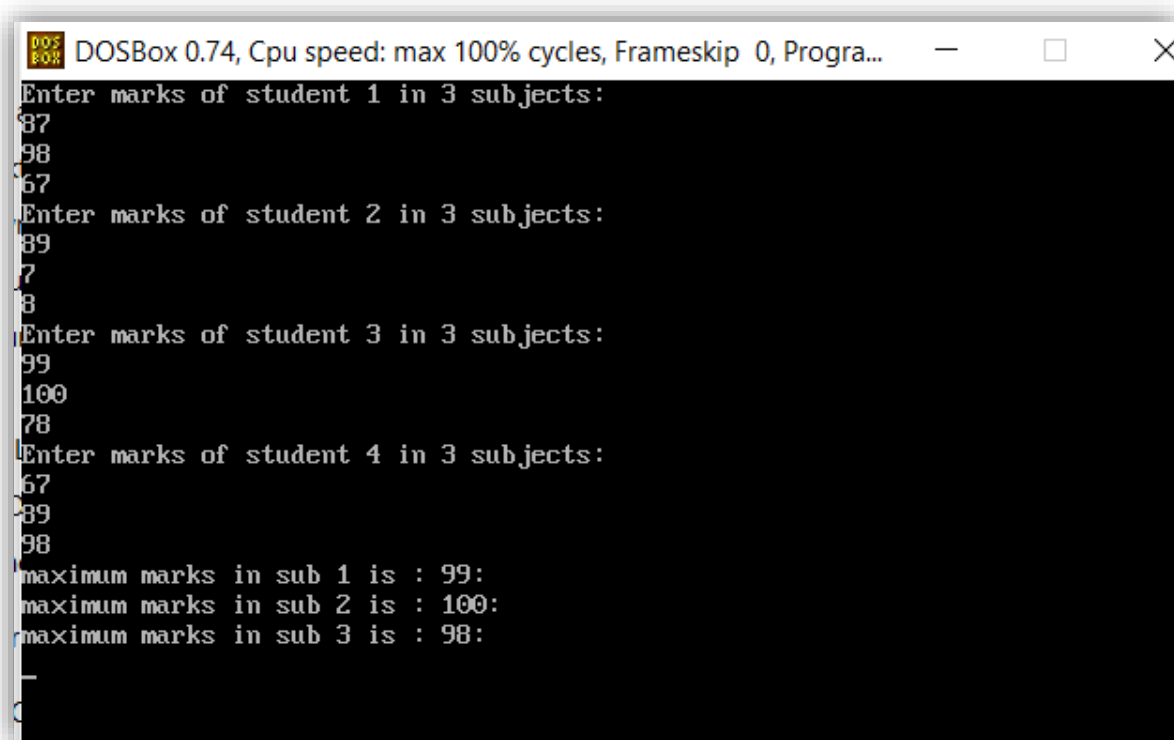
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter row size and column size of first matrix:
2
2
mat1[0][0]=1
mat1[0][1]=2
mat1[1][0]=3
mat1[1][1]=4
Enter row size and column size of 2nd matrix:
2
2
mat2[0][0]=5
mat2[0][1]=6
mat2[1][0]=7
mat2[1][1]=8
addition of mat1 and mat2 is:
6      8
10     12

```

19. Demonstrate reading a 2-dimensional array of marks which stores marks of 4 students in 3 subjects and display the highest marks in each subject.

```
#include<stdio.h>
#include<conio.h>
void main()
{
    int i,j,max,a[4][3];
    clrscr();
    for(i=0;i<4;i++)
    { printf("Enter marks of student %d in 3 subjects:",i+1);
      for(j=0;j<3;j++)
      {
          scanf("%d",&a[i][j]);
      }
    }
    for(j=0;j<3;j++)
    { max=a[0][j];
      for(i=0;i<4;i++)
      { if(a[i][j]>max)
          { max=a[i][j];
            }
        }
      printf("maximum marks in sub %d is : %d:\n",j+1,max);
    }
    getch();
}
```

OUTPUT:



```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter marks of student 1 in 3 subjects:
87
98
67
Enter marks of student 2 in 3 subjects:
89
7
8
Enter marks of student 3 in 3 subjects:
99
100
78
Enter marks of student 4 in 3 subjects:
67
89
98
maximum marks in sub 1 is : 99:
maximum marks in sub 2 is : 100:
maximum marks in sub 3 is : 98:
-
```

20. Develop a C program to print transpose of a matrix.

//program to print transpose of a matrix

```
#include<stdio.h>
#include<conio.h>
void main()
{ int i,j,a[20][20],t[20][20],row,col;
  clrscr();
  printf("Enter the row size and column size of the array:");
  scanf("%d%d",&row,&col);
  for(i=0;i<row;i++)
  { for(j=0;j<col;j++)
    { printf("a[%d][%d]=",i,j);
      scanf("%d",&a[i][j]);
    }
  }printf("given matrix:\n");
  for(i=0;i<row;i++)
  { for(j=0;j<col;j++)
    { printf("%d \t",a[i][j]);

    }printf("\n");
  }
  printf("Transpose of the given matrix:\n");
  for(i=0;i<row;i++)
  { for(j=0;j<col;j++)
    { t[j][i]=a[i][j];

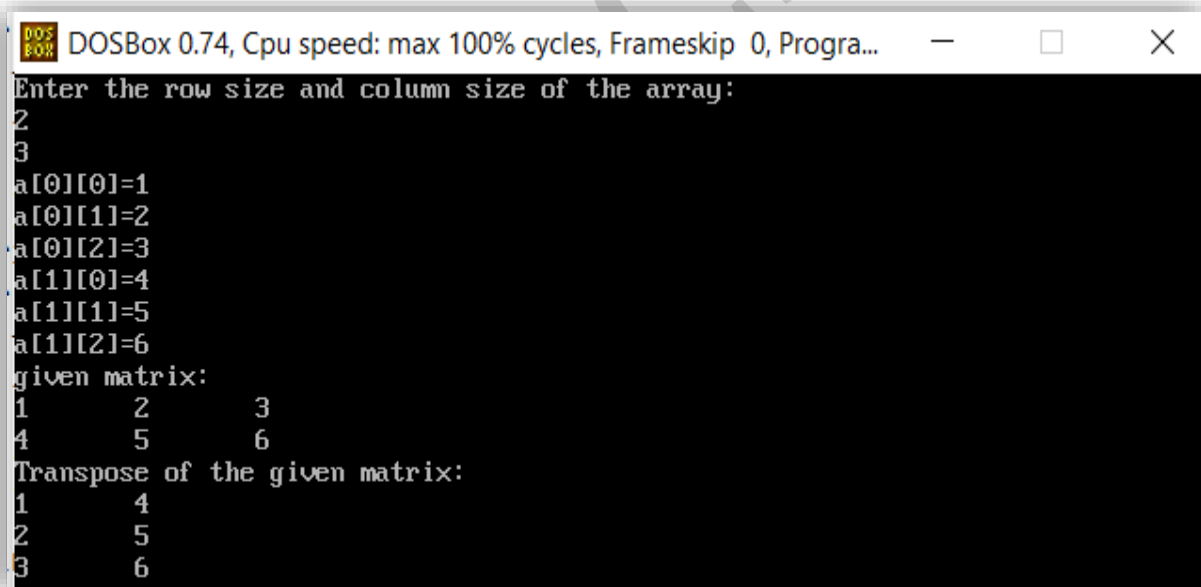
    }
  }
}
```



```
for(i=0;i<col;i++)
{ for(j=0;j<row;j++)
  { printf("%d \t",t[i][j]);

  }
  printf("\n");
}
getch();
}
```

OUTPUT:



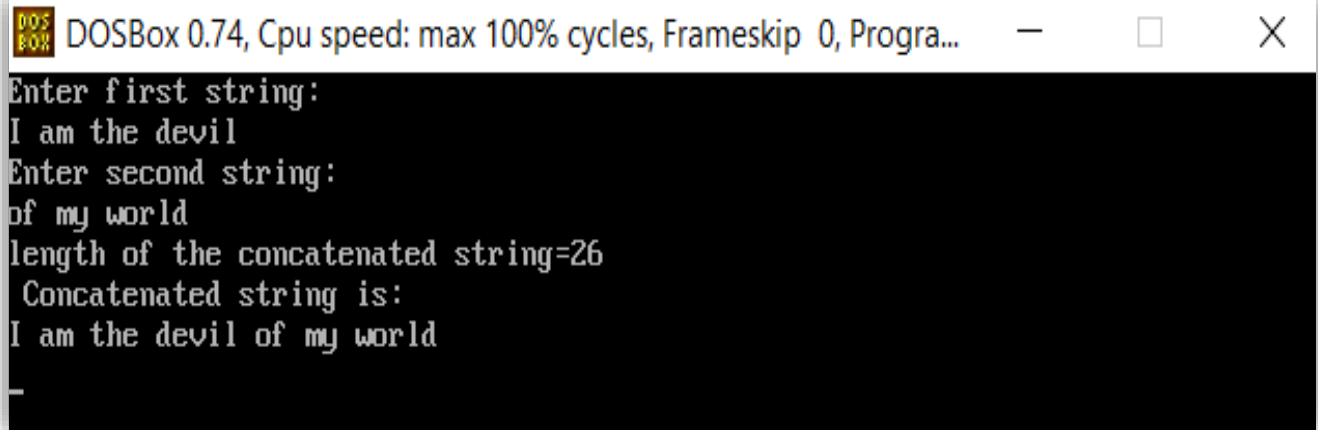
```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the row size and column size of the array:
2
3
a[0][0]=1
a[0][1]=2
a[0][2]=3
a[1][0]=4
a[1][1]=5
a[1][2]=6
given matrix:
1      2      3
4      5      6
Transpose of the given matrix:
1      4
2      5
3      6
```

21. Implement a c program to concatenate two strings and find the length of the resultant string without using built in functions.

```
#include<stdio.h>
#include<conio.h>
void main()
{ char str1[50],str2[50],str3[100];
  int i=0,j=0;
  clrscr();
  printf("Enter first string:\n");
  gets(str1);
  printf("Enter second string:\n");
  gets(str2);
  while(str1[i]!='\0')
  { str3[j]=str1[i];
    i++;
    j++;
  }
  i=0;
  while(str2[i]!='\0')
  { str3[j]=str2[i];
    i++;
    j++;}
  str3[j]='\0';

  printf("length of the concatenated string=%d\n Concatenated string is:\n",j);
  puts(str3);
  getch();
}
```

OUTPUT:

A screenshot of a DOSBox window. The title bar reads "DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...". The window contains a black terminal area with white text. The text shows a program prompting for two strings, concatenating them, and displaying the result. The strings entered are "I am the devil" and "of my world". The concatenated string is "I am the devil of my world".

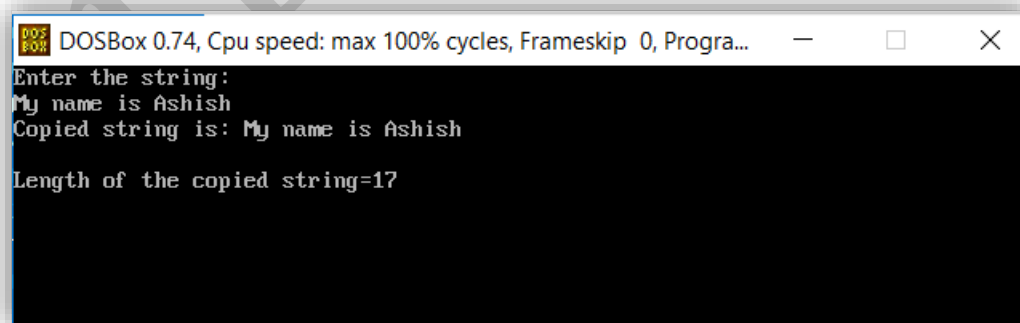
```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter first string:
I am the devil
Enter second string:
of my world
length of the concatenated string=26
Concatenated string is:
I am the devil of my world
-
```

22. Develop a C program to copy one string from to another string and find the length of the copied string.

```
#include<stdio.h>
#include<conio.h>
void main()
{ char str[50],costr[50],i,j=0;
  clrscr();
  printf("Enter the string:\n");
  gets(str);
  for(i=0;str[i]!='\0';i++)
  { costr[j]=str[i];
    j++;
  }
  costr[j]='\0';
  printf("Copied string is: %s\n",costr);

  printf("\nLength of the copied string=%d",j);
  getch();
}
```

OUTPUT:



```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the string:
My name is Ashish
Copied string is: My name is Ashish
Length of the copied string=17
```

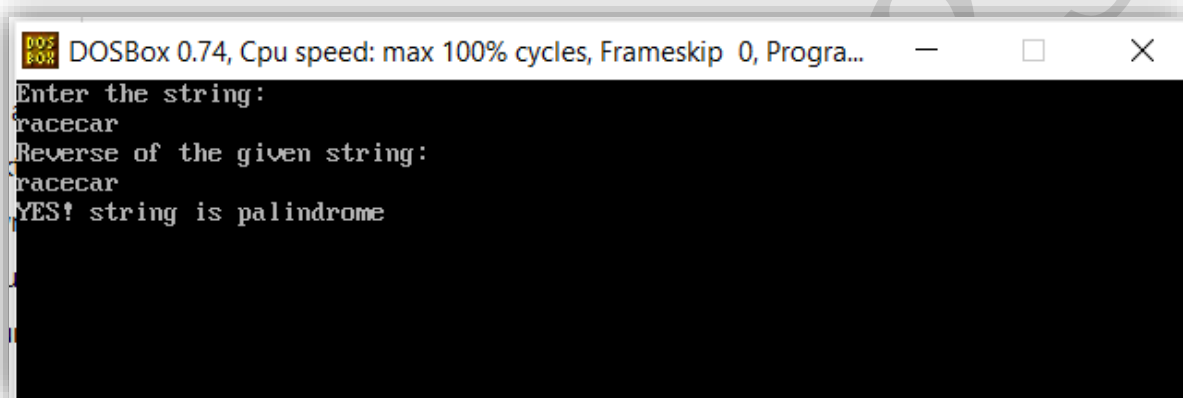
23. Develop a C program to check whether the given string is palindrome or not.

```
#include<stdio.h>
#include<string.h>
#include<conio.h>
void main()
{
    char str[50],revstr[50];
    int n,i=0,flag=1;
    clrscr();
    printf("Enter the string:\n");
    gets(str);
    n=strlen(str)-1;
    while(str[i]!='\0')
    { revstr[i]=str[n];
      i++;
      n--;}
    revstr[i]='\0';
    printf("Reverse of the given string:\n");
    puts(revstr);

    n=strlen(str)-1;
    for(i=0;i<=n;i++)
    { if(str[i]!=revstr[i])
      { flag=0;
        break;
      }
    }
    if(flag)
    {printf("palindrome");}
    else
    {printf("not a palindrome");}
```

```
getch();  
}
```

OUTPUT:



24. Develop a c program to create student structure, read two students details and print the student details who has scored the highest.

```
//enter details of std1 and std2 and print high scored student details
#include<stdio.h>
#include<conio.h>
void main()
{ struct student
  {int rollno;
   char name[20];
   char sec[20];
   char dep[20];
   float fees;
   int result;
  }std1,std2;
  clrscr();
  printf("Enter the details of student-1:
roll_number,name,section,dep,fees,result");
  scanf("%d %s %s %s %f
%d",&std1.rollno,std1.name,std1.sec,std1.dep,&std1.fees,&std1.result);
  printf("Enter the details of student-2:
roll_number,name,section,dep,fees,result");
  scanf("%d %s %s %s %f
%d",&std2.rollno,std2.name,std2.sec,std2.dep,&std2.fees,&std2.result);
  if(std1.result>std2.result)
  { printf("Highest scored student is student-1:\n");
    printf("%d\t %s \t %s \t %s\t %.2f \t
%d",std1.rollno,std1.name,std1.sec,std1.dep,std1.fees,std1.result);
  }
}
```

```

else
{ printf("Highest scored student is student-2:\n");
  printf("%d\t %s \t %s \t %s\t %.2f \t
%d",std2.rollno,std2.name,std2.sec,std2.dep,std2.fees,std2.result);
}
getch();
}

```

OUTPUT:

```

Enter the details of student-1: roll_number,name,section,dep
1
Ashish
cc
cse
22060
490
Enter the details of student-2: roll_number,name,section,dep
34
siraj
cc
is
60450
489
Highest scored student is student-1:
1      Ashish      cc      cse      22060.00      490

```


25. Develop a C program to perform arithmetic operations on two integers using pointers concept.

```
//maths operations on pointers
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,*p,*q,sum,sub,mul,rem;
    float div;
    clrscr();
    printf("Enter the values of a and b:\n");
    scanf("%d %d",&a,&b);
    p=&a;
    q=&b;
    //mathematical operations using pointers
    sum=(*p)+(*q);
    sub=(*p)-(*q);
    mul=(*p)*(*q);
    div=(float)*p/(*q);
    rem=(*p)%(*q);
    printf(" Sum=%d\n Substraction=%d\n Multiplication=%d\n Remainder=%d\n\n Division=%.4f\n",sum,sub,mul,rem,div);
    getch();
}
```

OUTPUT:

```
Enter the values of a and b:
23
56
Sum=79
Substraction=-33
Multiplication=1288
Remainder=23
Division=0.4107
```

26. Develop a C program to read and print three book details (i.e. Book title ,Author,Price, number of pages, date of publication). Also print the book details with highest price.

```
#include<stdio.h>
#include<conio.h>
void main()
{ int max;
  struct book
  { char title[20];
    char author[20];
    int price;
    int pages;
    char date[20];
  }b1,b2,b3;
  clrscr();
  printf("\nEnter the details of book-1 in order:title,author,price,number of
pages,date \n");
  scanf("%s%s%d%d%s",b1.title,b1.author,&b1.price,&b1.pages,b1.date);
  printf("\nEnter the details of book-2 in order:title,author,price,number of
pages,date \n");
  scanf("%s%s%d%d%s",b2.title,b2.author,&b2.price,&b2.pages,b2.date);
  printf("\nEnter the details of book-3 in order:title,author,price,number of
pages,date \n");
  scanf("%s%s%d%d%s",b3.title,b3.author,&b3.price,&b3.pages,b3.date);

  max=(b1.price>=b2.price)?(b1.price>=b3.price?b1.price:b3.price):(b2.price>=b3.
price?b2.price:b3.price);
  printf("max=%d",max);
  if(max==b1.price)
  { printf("\nhighest priced book is:book-1\n");
    printf("%s\t%s\t%d\t%d\t%s",b1.title,b1.author,b1.price,b1.pages,b1.date);
```

```

}
else if(max==b2.price)
{ printf("\nhighest priced book is:book-2\n");
  printf("%s\t%s\t%d\t%d\t%s",b2.title,b2.author,b2.price,b2.pages,b2.date);
}
else
{ printf("\nhighest priced book is:book-3\n");
  printf("%s\t%s\t%d\t%d\t%s",b3.title,b3.author,b3.price,b3.pages,b3.date);
}

getch();
}

```

OUTPUT:

```

Enter the details of book-1 in order:title,author,price,number of pages,date
wings_of_fire
abdul_kalam
599
300
12-03-2001

Enter the details of book-2 in order:title,author,price,number of pages,date
Accident
joey_tribbiany
490
400
11-02-2005

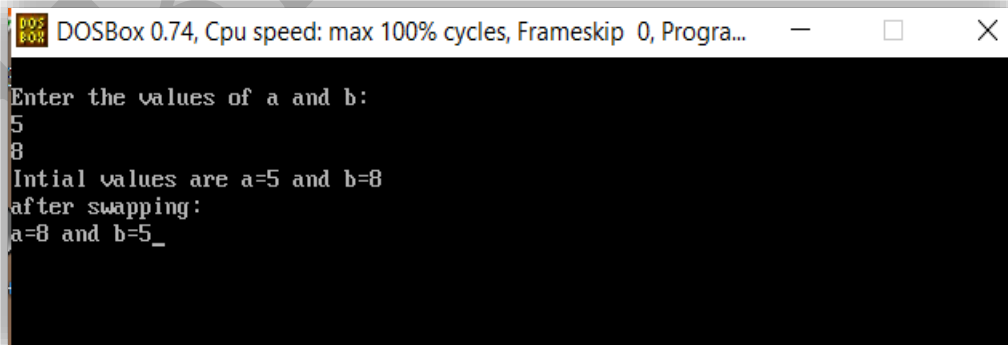
Enter the details of book-3 in order:title,author,price,number of pages,date
smelly_cat
pheebee
495
600
14-09-2009
max=599
highest priced book is:book-1
wings_of_fire    abdul_kalam    599    300    12-03-2001

```

27. Illustrate swapping into pointers.

```
//swap using pointers
#include<stdio.h>
#include<conio.h>
void main()
{
    int a,b,*pa,*pb,temp;
    clrscr();
    printf("\nEnter the values of a and b:\n");
    scanf("%d %d",&a,&b);
    pa=&a;
    pb=&b;
    printf("Initial values are a=%d and b=%d\nafter swapping:\n",a,b);
    temp=*pa;
    *pa=*pb;
    *pb=temp;
    printf("a=%d and b=%d",a,b);
    getch();
}
```

OUTPUT:



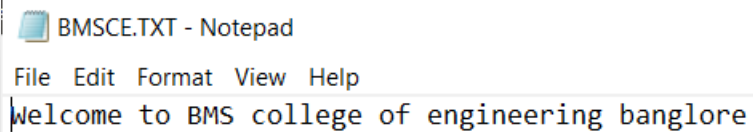
```
DOSBox 0.74, Cpu speed: max 100% cycles, Frameskip 0, Progra...
Enter the values of a and b:
5
8
Initial values are a=5 and b=8
after swapping:
a=8 and b=5_
```

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

```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
void main()
{ FILE *fp;
  char c;
  char str[100];
  clrscr();
  printf("Data Input\n");
  fp=fopen("bmsce.txt","w");
  while((c=getchar())!=EOF) //press ctrl+z to end the program
  { putc(c,fp);}
  fclose(fp);
  printf("Data output\n");
  fp=fopen("bmsce.txt","r");
  if(fp==NULL)
  { printf("ERROR");
    exit(1);
  }
  fgets(str,100,fp);
  puts(str);
  fclose(fp);
  getch();
}
```

OUTPUT:

```
Data Input  
Welcome to BMS college of engineering banglore →  
Data output  
Welcome to BMS college of engineering banglore
```



BMSCE.TXT - Notepad
File Edit Format View Help
Welcome to BMS college of engineering banglore