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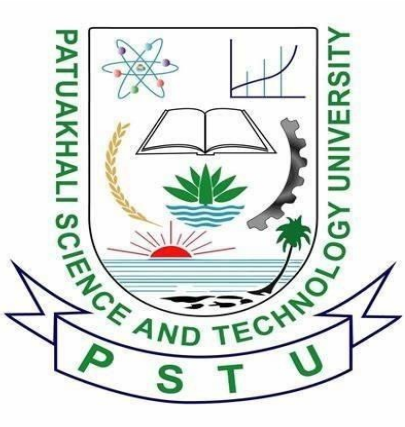

Course Code: CIT-112

SUBMITTED TO:

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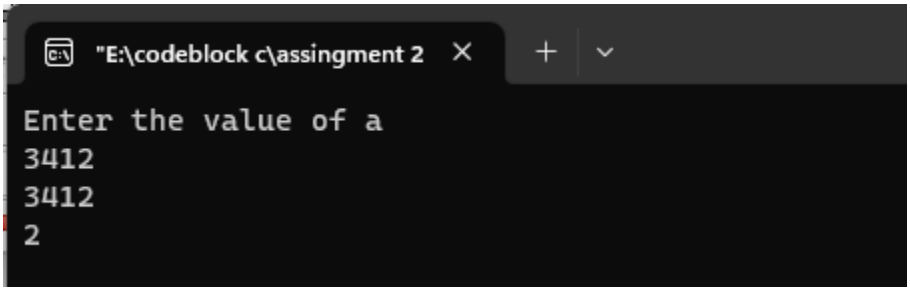
Programming exercise

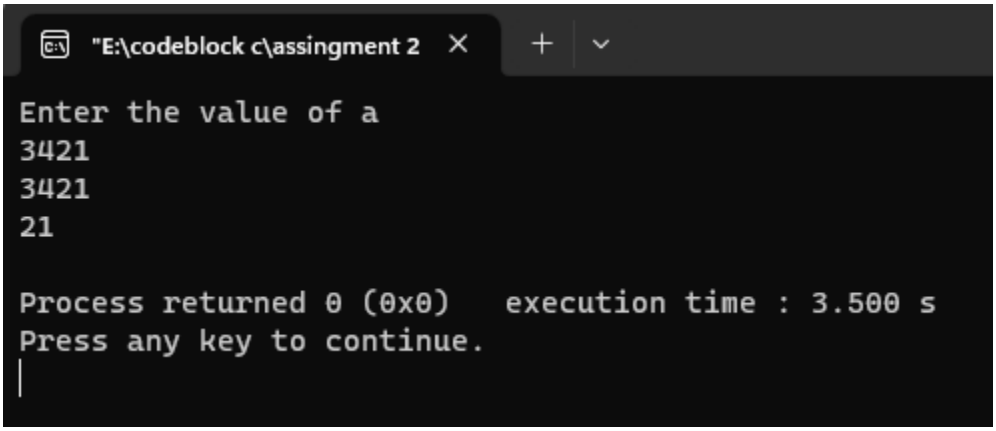
4.1 A program displays the right-most digit of the integral part of the number

```
#include<stdio.h>


int main()


{
int a,e;
printf("Enter the value of a\n");
scanf("%d",&a);
e=a%10;
if(a>10)
printf("%d\n%d\n",a,e);
}
```



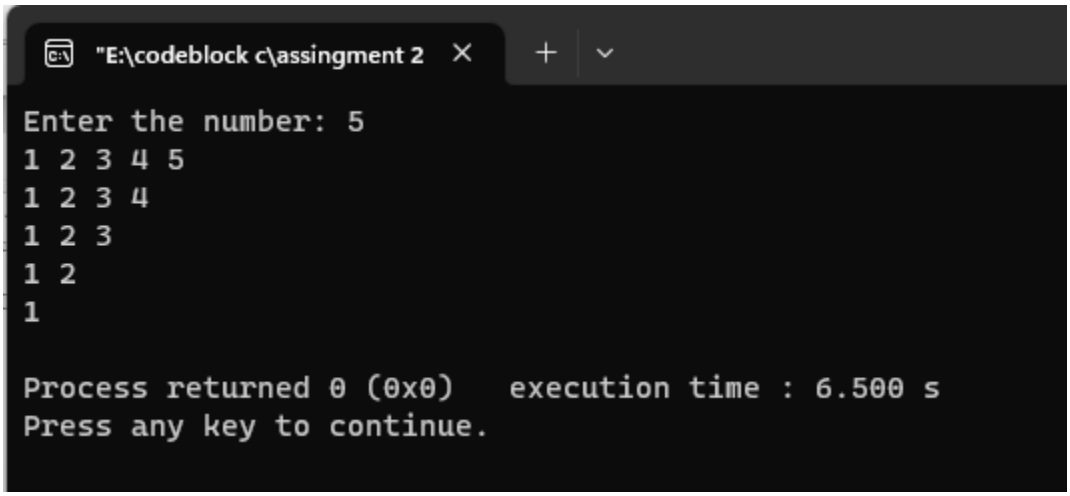
4.2 Modify the above program to display the two right most digits of the integral part

```
#include<stdio.h>

int main()

{

int a,e;
printf("Enter the value of a\n");
scanf("%d",&a);
e=a%100;
if(a>100)
printf("%d\n%d\n",a,e);
}
```



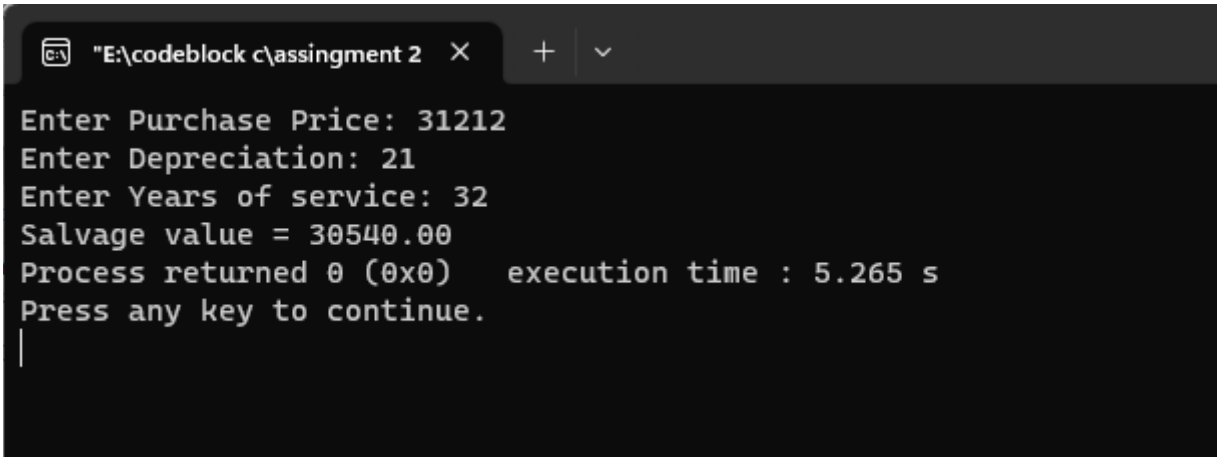
4.3 Given an integer number, write a program that displays the number as follows: First line : all digits Second line : all except first digit Third line : all except first two digits

```
#include<stdio.h>
int main()
{
   int n,i,x;
   printf("Enter the number: ");
   scanf("%d",&n);
    for(i=n;i>=1;i--)
    {
      for(x=1;x<=i;x++)
       {
   printf("%d ",x);
       }
       printf("\n");
    }
}
```



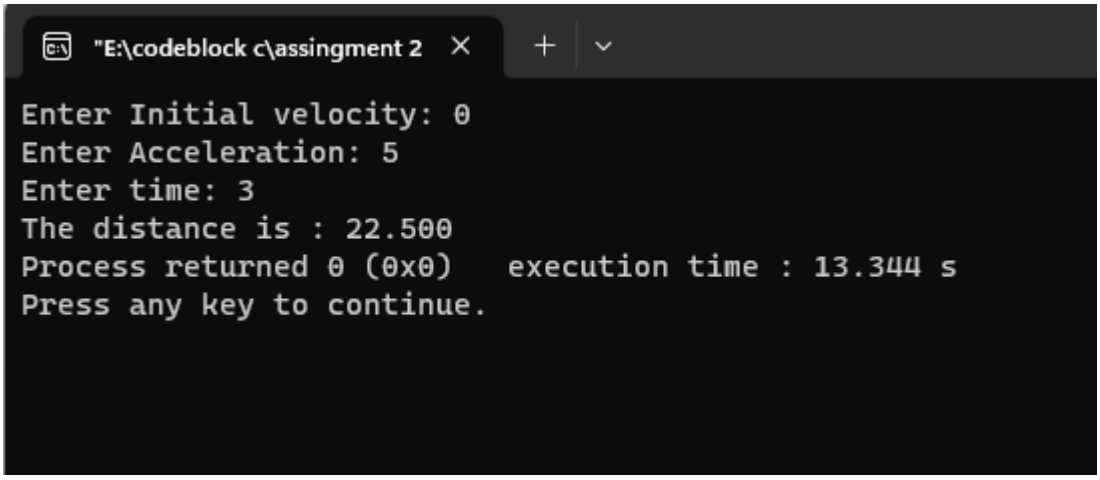
4.4 a program to determine the salvage value of an item when the purchase price, years of service, and the annual depreciation are given

```
#include<stdio.h>
int main()
{
   //pp= purchase price;sv=salvage value;yos=years of service;
   //dep=Depreciation
  float pp,sv,yos;
   float dep
   printf("Enter Purchase Price: ");
   scanf("%f",&pp);
   printf("Enter Depreciation: ");
   scanf("%f",&dep);
   printf("Enter Years of service: ");
   scanf("%f",&yos);
   sv=pp-(yos*dep);
   printf("Salvage value = %0.2f",sv);
}
```



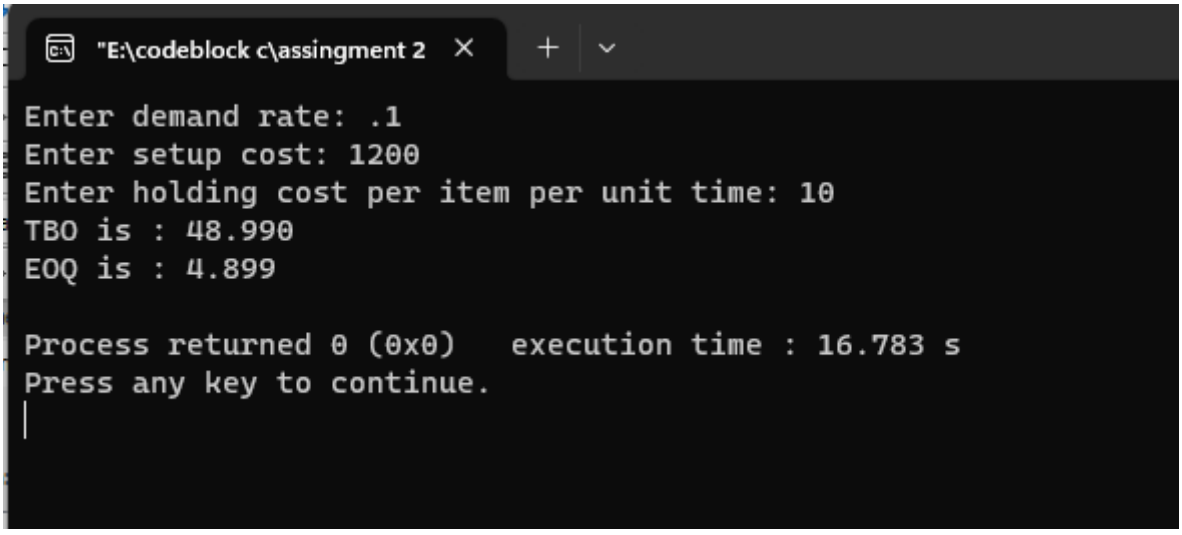
4.6 The total distance travelled by a vehicle in t seconds

```
#include<stdio.h>
int main()
{
   //a=acceleration;t=time;u=initial velocity;d=distance;
   float d,t,a,u;
   printf("Enter Initial velocity: ");
   scanf("%f",&u);
   printf("Enter Acceleration: ");
   scanf("%f",&a);
   printf("Enter time: ");
   scanf("%f",&t);
   d=(u*t+(a*t*t)/2);
   printf("The distance is : %0.3f",d);
}
```



4.7 a program to compute EOQ and TBO, given demand rate (items per unit time), setup costs (per order), and the holding cost (per item per unit time).

```
#include<stdio.h>
int main()
/*
demand rate=dr ;setup cost = sc ;holding cost per item per unit time = hc ;
*/
{
   float TBO,EOQ,dr,sc,hc;
   printf("Enter demand rate: ");
   scanf("%f",&dr);
   printf("Enter setup cost: ");
   scanf("%f",&sc);
   printf("Enter holding cost per item per unit time: ");
   scanf("%f",&hc);
   EOQ = sqrt((2*dr*sc)/(hc));
   TBO = sqrt((2*sc)/(dr*hc));
   printf("TBO is : %0.3f\n",TBO);
   printf("EOQ is : %0.3f\n",EOQ);
}
```

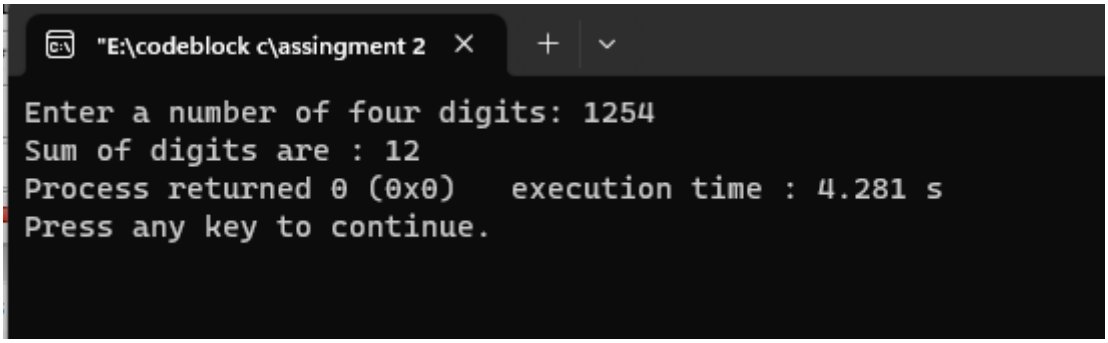


4.8 a program to calculate the frequency for different values of C starting from 0.01 to 0.1 in steps of 0.01.

```
#include<stdio.h>
int main()
{
   double r,c,l,fr;
   //r=resistance;l=inductance;c=capacitance;fr=frequency;
   printf("Enter resistance: ");
   scanf("%lf",&r);
   printf("Enter inductance: ");
   scanf("%lf",&l);
   printf("Enter capacitance from 0.01 to 0.1: ");
   scanf("%lf",&c);
   fr=sqrt((1/(l*c))-((r*r)/(4*c*c)));
   printf("The Frequency is %0.2lf",fr);
}
```

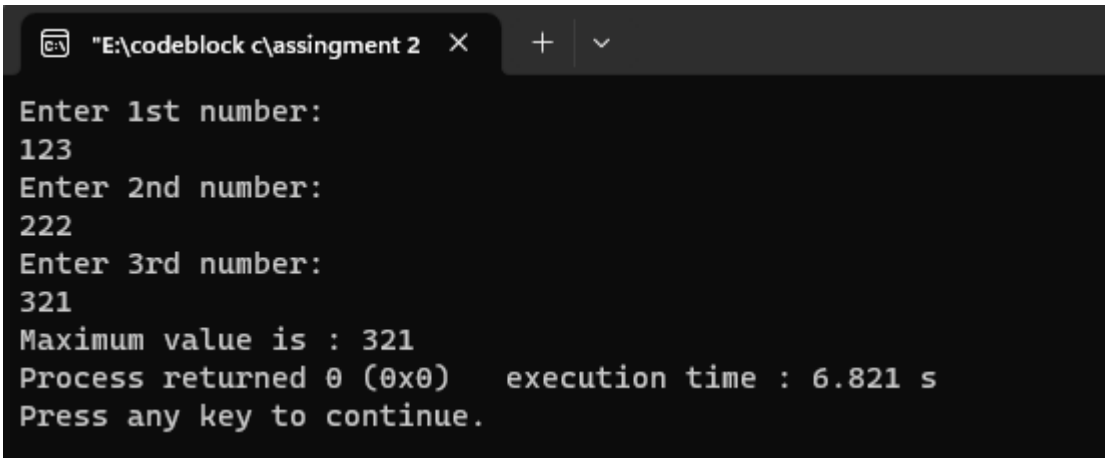
4.9 a program to read a four digit integer and print the sum of its digits

```
#include<stdio.h>
int main()
{
   int n,sum=0,r,x;
   printf("Enter a number of four digits: ");
   scanf("%d",&n);
   while(n!=0){

   r=n%10;
   sum=sum+r;
   n=n/10;}
   printf("Sum of digits are : %d",sum);
}
```



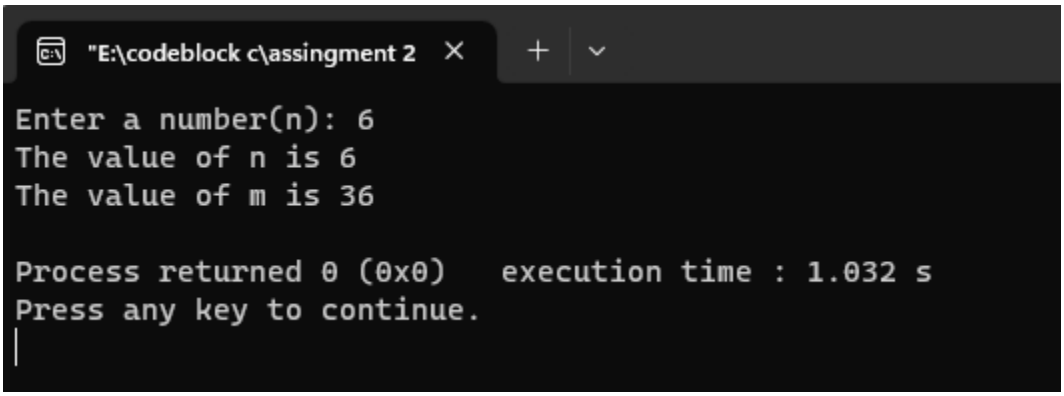
4.10 a program to read three values from keyboard and print out the largest of them without using if statement.

```
#include<stdio.h>
int main()
{
   int n1,n2,n3;
   printf("Enter 1st number: \n");
   scanf("%d",&n1);
   printf("Enter 2nd number: \n");
   scanf("%d",&n2);
   printf("Enter 3rd number: \n");
   scanf("%d",&n3);
int maximum = (n1> n2) ? ((n1 > n3) ? n1 : n3) : ((n2 > n3) ? n2 : n3);
printf("Maximum value is : %d",maximum);


}
```



4.11 a program to read two integer values m and n and to decide and print whether m is a multiple of n.

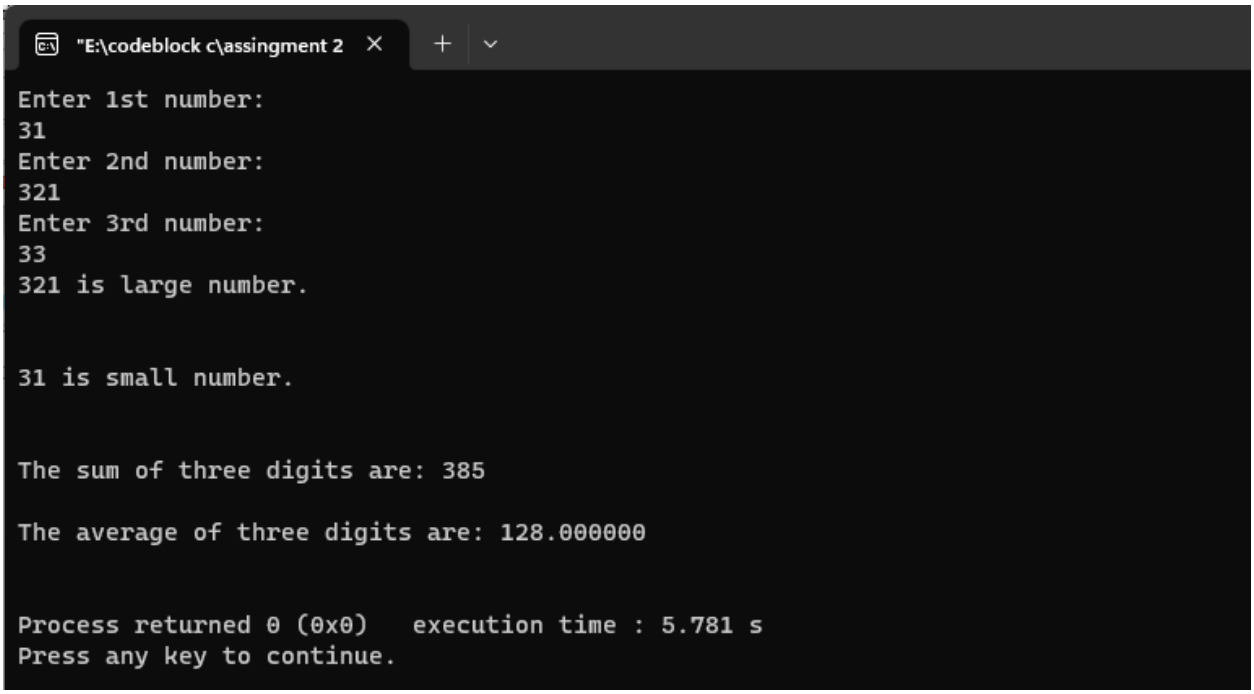
```
#include<stdio.h>
int main()
{
   int m,n;
   printf("Enter a number(n): ");
   scanf("%d",&n);
   m=n*n;
   printf("The value of n is %d\n",n);
   printf("The value of m is %d\n",m);
}
```



4.12 a program to read three values using scanf statement and print the following results: (a) Sum of the values (b) Average of the three values (c) Largest of the three (d) Smallest of the three

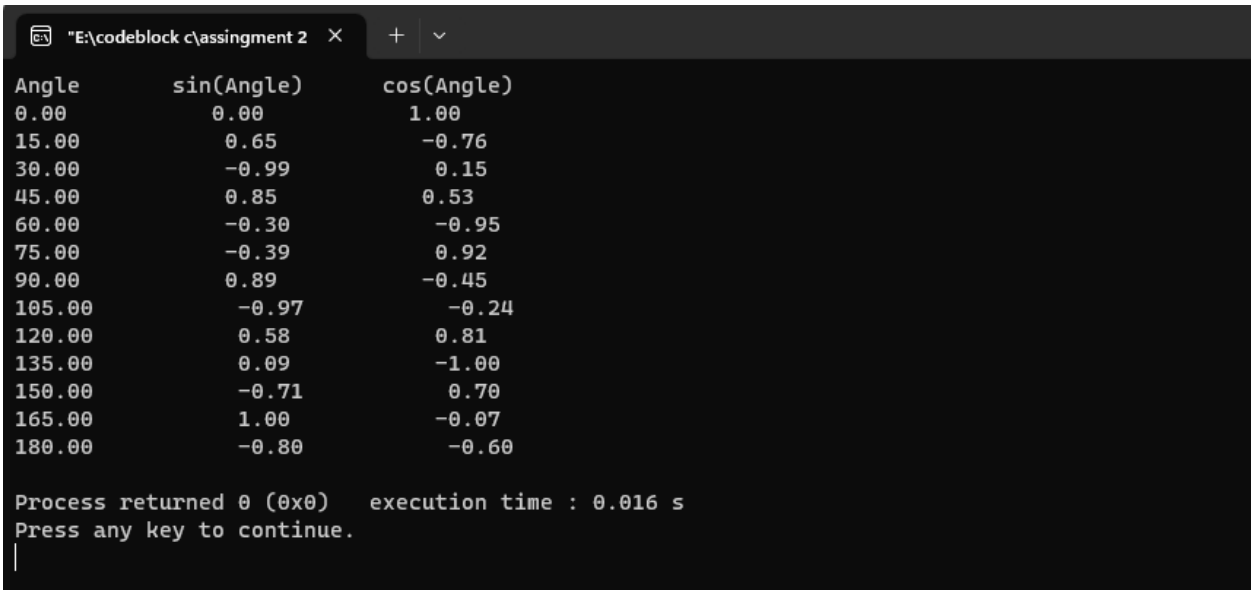
```
#include<stdio.h>
int main()
{
   int n1,n2,n3;
   printf("Enter 1st number: \n");
   scanf("%d",&n1);
   printf("Enter 2nd number: \n");
   scanf("%d",&n2);
   printf("Enter 3rd number: \n");
   scanf("%d",&n3);
   if(n1>n2&&n1>n3)
      printf("%d is large number. \n",n1);
   else if(n2>n1&&n2>n3)
      printf("%d is large number. \n",n2);
   else
      printf("%d is large number. \n",n3);
   printf("\n\n");
      if(n1<n2&&n1<n3)
      printf("%d is small number. \n",n1);
   else if(n2<n1&&n2<n3)
      printf("%d is small number. \n",n2);
   else
      printf("%d is small number. \n",n3);

   printf("\n\n");

   int sum=n1+n2+n3;
```

```
    float av= sum/3;

    printf("The sum of three digits are: %d\n\n",sum);
    printf("The average of three digits are: %f\n\n",av);
}
```



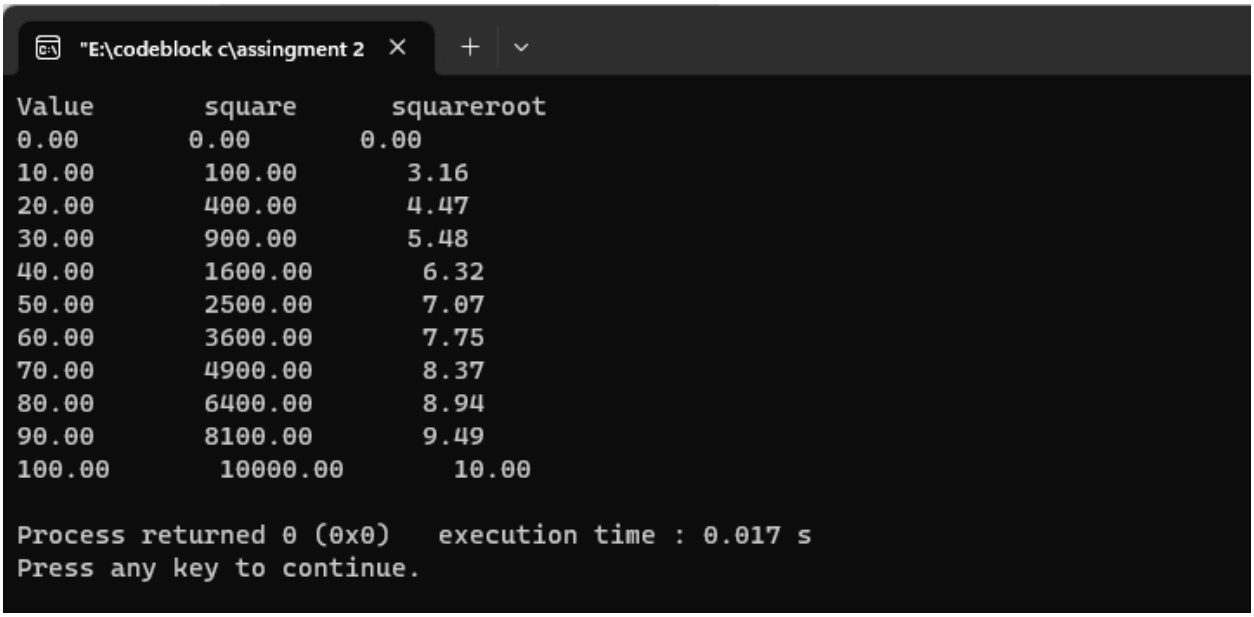
4.14 a program to print a table of sin and cos functions for the interval from 0 to 180 degrees in increments of 15

```
#include<stdio.h>
#include<math.h>
int main()
{
   float x,y,i;
   printf("Angle       sin(Angle)      cos(Angle)\n");
   for(i=0;i<=180;i=i+15)
   {
      x=sin(i);
      y=cos(i);
      printf("%0.2f          %0.2f          %0.2f\n",i,x,y);
   }

}
```



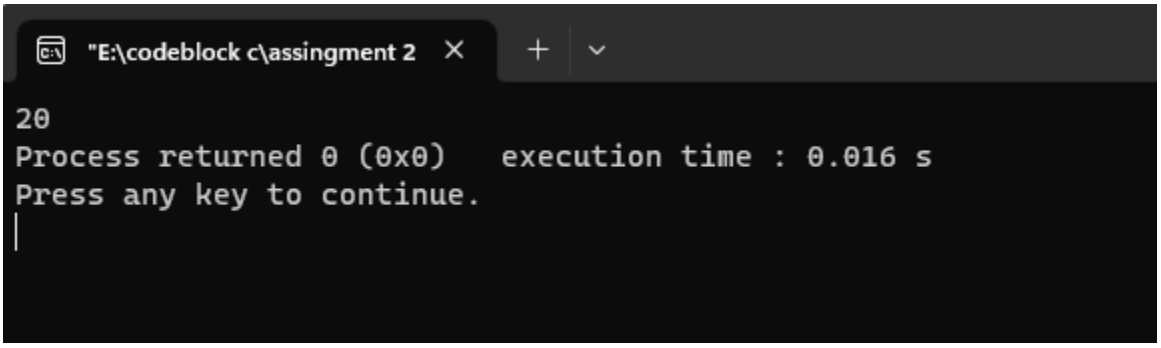
4.15 a program to compute the values of square□roots and squares of the numbers 0 to 100 in steps 10 and print the output in a tabular form

```
#include<stdio.h>
int main()
{
   float i,x,y;
   printf("Value      square      squareroot\n");
   for(i=0;i<=100;i=i+10)
   {
      x=i*i;
      y=sqrt(i);
      printf("%0.2f      %0.2f      %0.2f\n",i,x,y);
   }


}
```



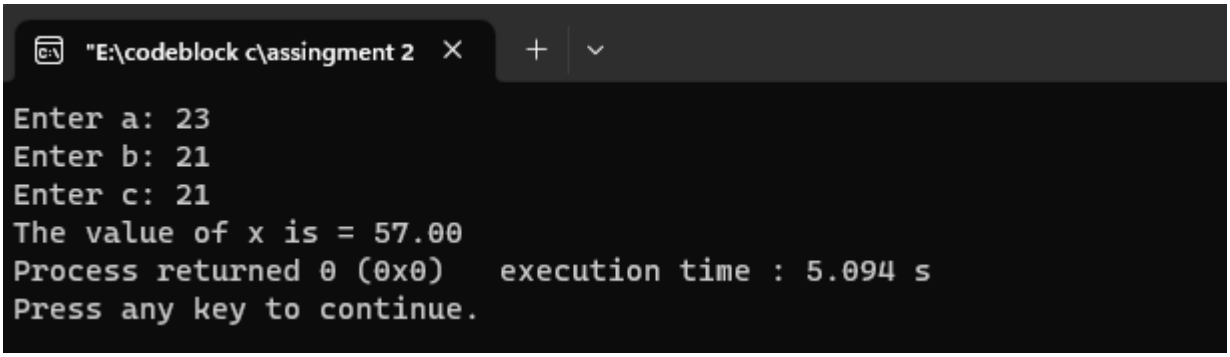
4.17 a C program to shift the given data by two bits to the left.

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

   int d =5;
   printf("%d",(d<<2));

}
```



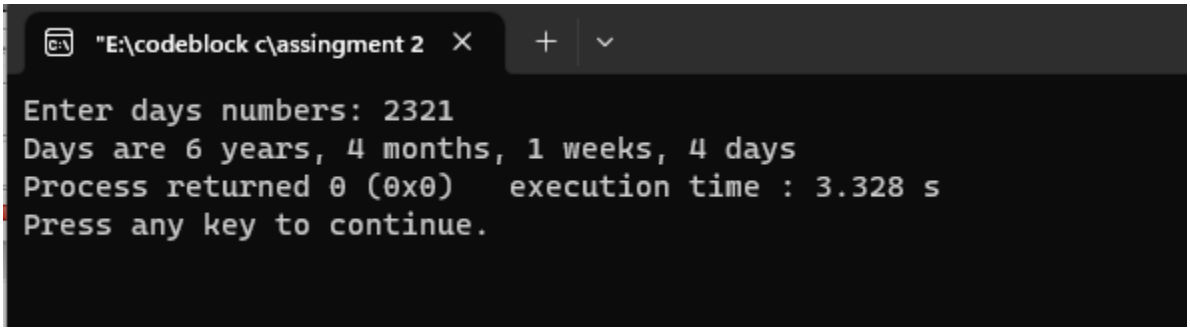
4.18 a C program to compute the value of the expression x=a-b/3+c*2-1.

```
#include<stdio.h>
int main()
{
   float a,b,c,x;
   printf("Enter a: ");
   scanf("%f",&a);
   printf("Enter b: ");
   scanf("%f",&b);
   printf("Enter c: ");
   scanf("%f",&c);
    x=a-b/3+c*2-1;
    printf("The value of x is = %0.2f",x);
}
```



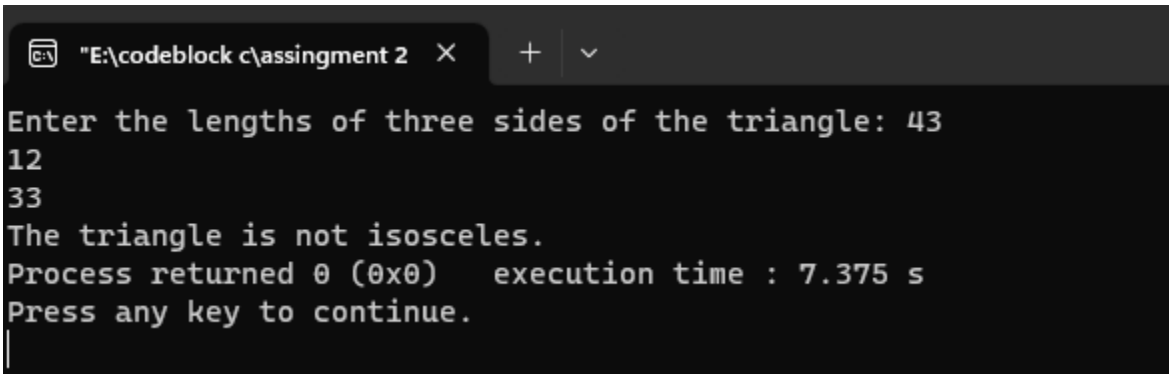
4.20 a C program to input a date value and determine whether the entered day, month, and year values are valid.

```
#include<stdio.h>
int main()
{
   int year,t,rd,rd2,month,week,days;
   printf("Enter days numbers: ");
   scanf("%d",&t);
   //rh=remain second after getting hours
   year=t/365;
   rd=t%365;
   month=rd/30;
   rd2=rd%30;
   week=rd2/7;
   days=rd2%7;
   printf("Days are %d years, %d months, %d weeks, %d days",year,month,week,days);
   return 0;
   }
```



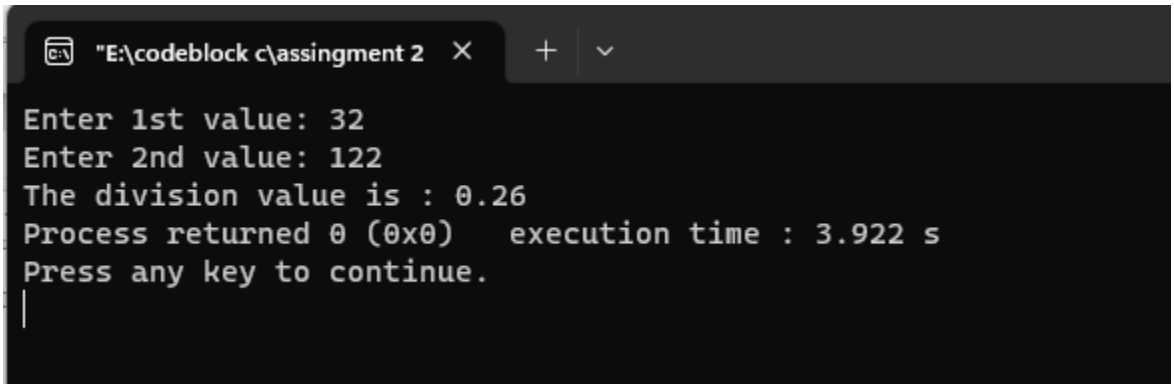
4.20 a C program to input the sides of a triangle and determine whether the triangle is isoceles or not.

```
#include <stdio.h>

int main() {
    int side1, side2, side3;

    // Read the lengths of three sides of the triangle
    printf("Enter the lengths of three sides of the triangle: ");
    scanf("%d %d %d", &side1, &side2, &side3);

    // Check if the triangle is isosceles or not
    if (side1 == side2 || side1 == side3 || side2 == side3) {
        printf("The triangle is isosceles.");
    } else {
        printf("The triangle is not isosceles.");
    }

    return 0;
}
```



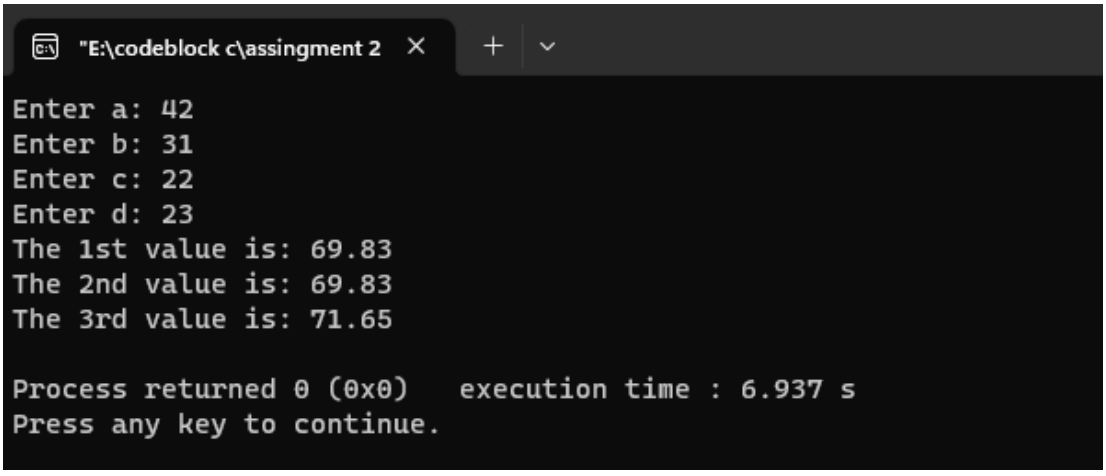
4.21 a C program that reads two numbers and performs their division. If the division is not possible, then an error message, 'Division not possible' is displayed.

```
#include<stdio.h>
int main()
{
   float x,y,z;
   printf("Enter 1st value: ");
   scanf("%f",&x);
   printf("Enter 2nd value: ");
   scanf("%f",&y);
   z=x/y;
   if(y==0)
      printf("division not possible");
   else
      printf("The division value is : %0.2f",z);
}
```



4.22 the value of 4 variables a, b, c and d and compute the resultant value of following expressions: (a + b) * (c / d) (a + b) * c / d a + (b * c) / d

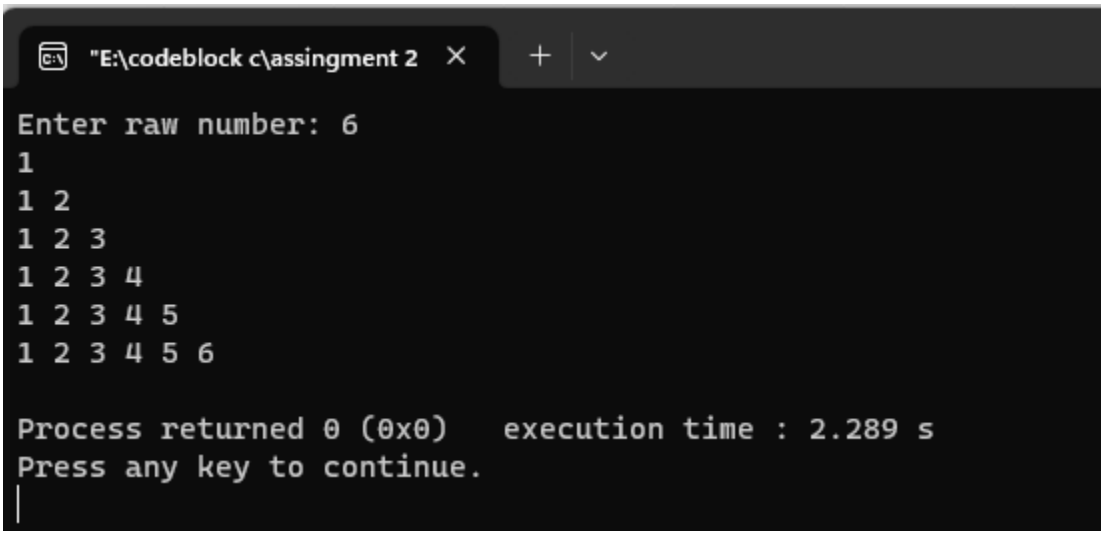
```
#include<stdio.h>
int main()
{
   float x,y,z,a,b,c,d;
   printf("Enter a: ");
   scanf("%f",&a);
   printf("Enter b: ");
   scanf("%f",&b);
   printf("Enter c: ");
   scanf("%f",&c);
   printf("Enter d: ");
   scanf("%f",&d);
   x=(a+b)*(c/d);
   y=(a+b)*c/d;
   z=a+(b*c)/d;
   printf("The 1st value is: %0.2f\n",x);
   printf("The 2nd value is: %0.2f\n",y);
   printf("The 3rd value is: %0.2f\n",z);
}
```



Other programming exercise

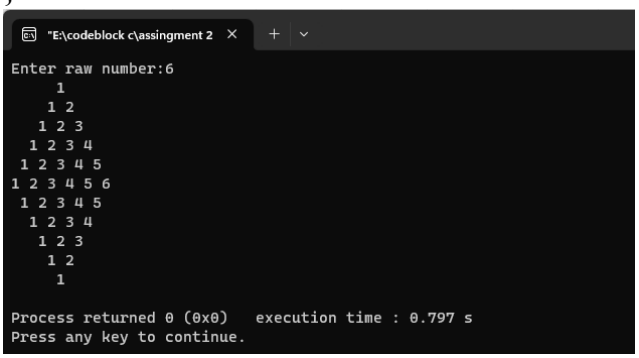
1. Pattern 1

```
#include<stdio.h>
int main()
{
   int i,j,n;
   printf("Enter raw number: ");
   scanf("%d",&n);
   for(i=1;i<=n;i++)
   {
      for(j=1;j<=i;j++)
      {
         printf("%d ",j);
      }
   printf("\n");
   }
}
```



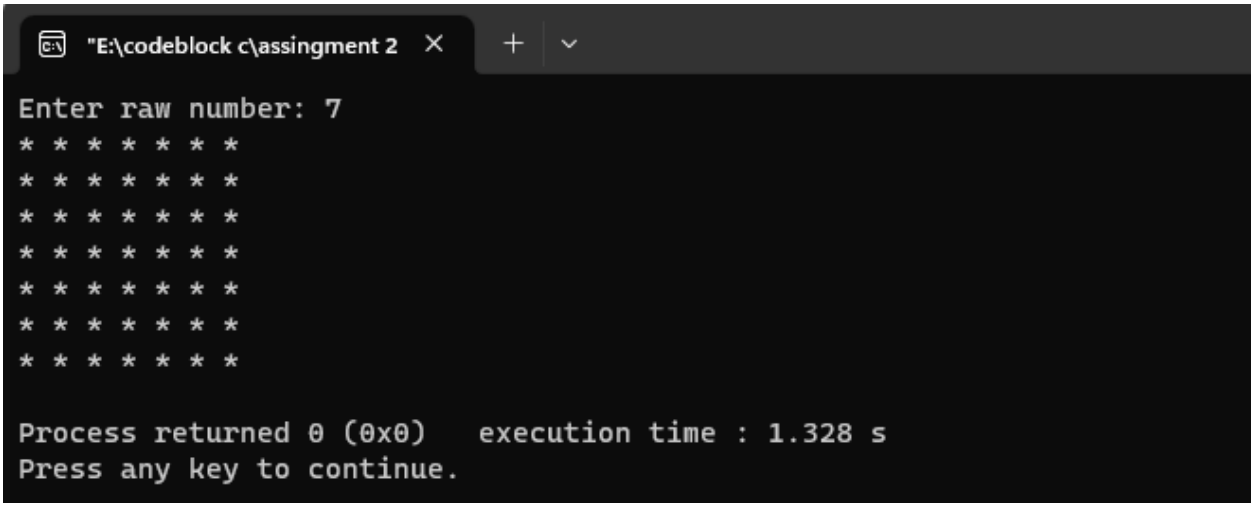
2. Pattern 2

```
#include<stdio.h>
int main()
{
   int n,r,c;
   printf("Enter raw number:");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=n-r;c++)
      {
         printf(" ");
      }
      for(c=1;c<=r;c++)
         {
          printf("%d ",c);
         }
   printf("\n");
   }
   for(r=n-1;r>=1;r--)
   {
      for(c=n-r;c>=1;c--)
      {
         printf(" ");
      }

      for(c=1;c<=r;c++)\
         {
          printf("%d ",c);
         }
   printf("\n");
   }
}
```



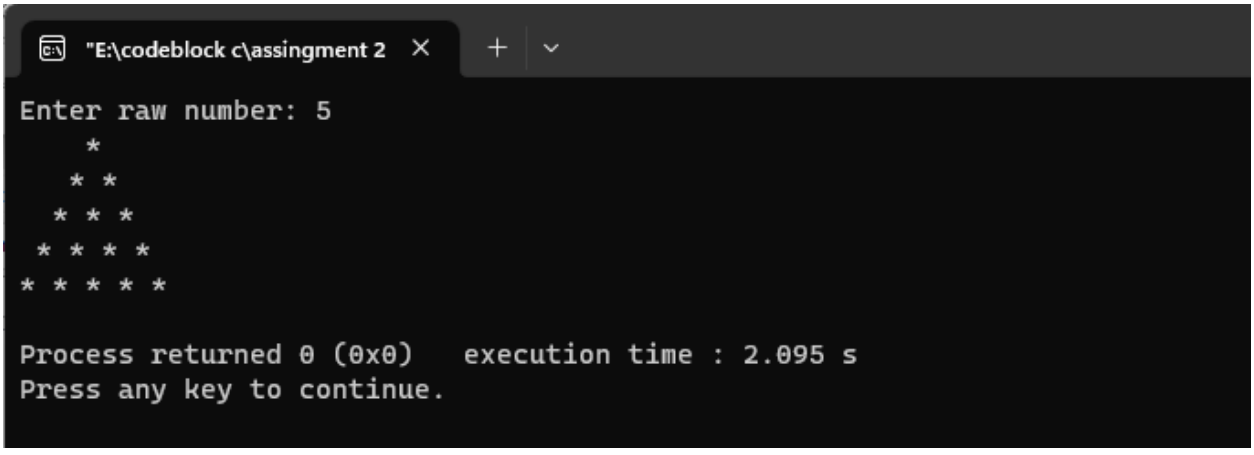
3. Pattern 3

```
#include<stdio.h>
int main()
{
   int r,c,n;
   printf("Enter raw number: ");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=n;c++)
      printf("* ");
      printf("\n");
    }
}
```



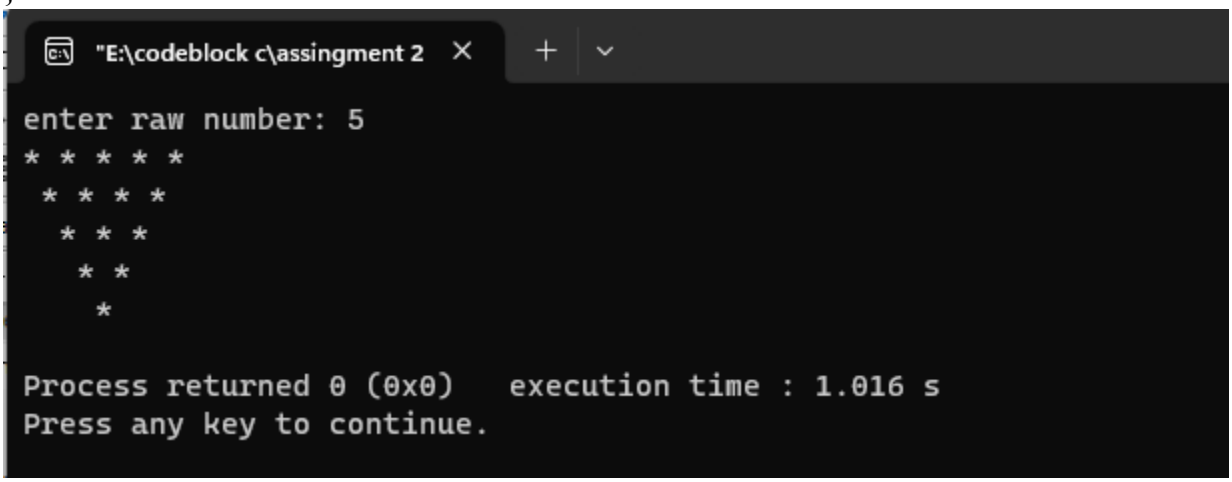
4. Pattern 4

```
#include<stdio.h>
int main()
{
   int n,r,c;
   printf("Enter raw number: ");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=n-r;c++)
      {
         printf(" ");
      }
      for(c=1;c<=r;c++)
      {
         printf("* ");
      }
printf("\n");
  }
}
```



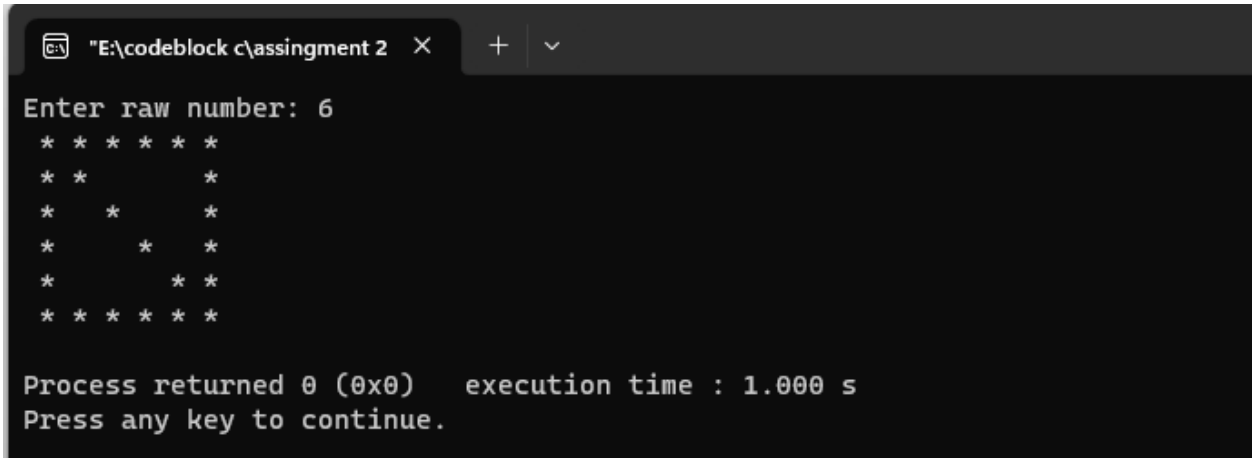
5. Pattern 5

```
#include<stdio.h>
int main()
{
   int n,r,c;
   printf("enter raw number: ");
   scanf("%d",&n);
   for(r=n;r>=1;r--)
   {

      for(c=n-r;c>=1;c--)
      {

      printf(" ");}
      for(c=1;c<=r;c++)
         {printf("* ");}

      printf("\n");
   }


}
```



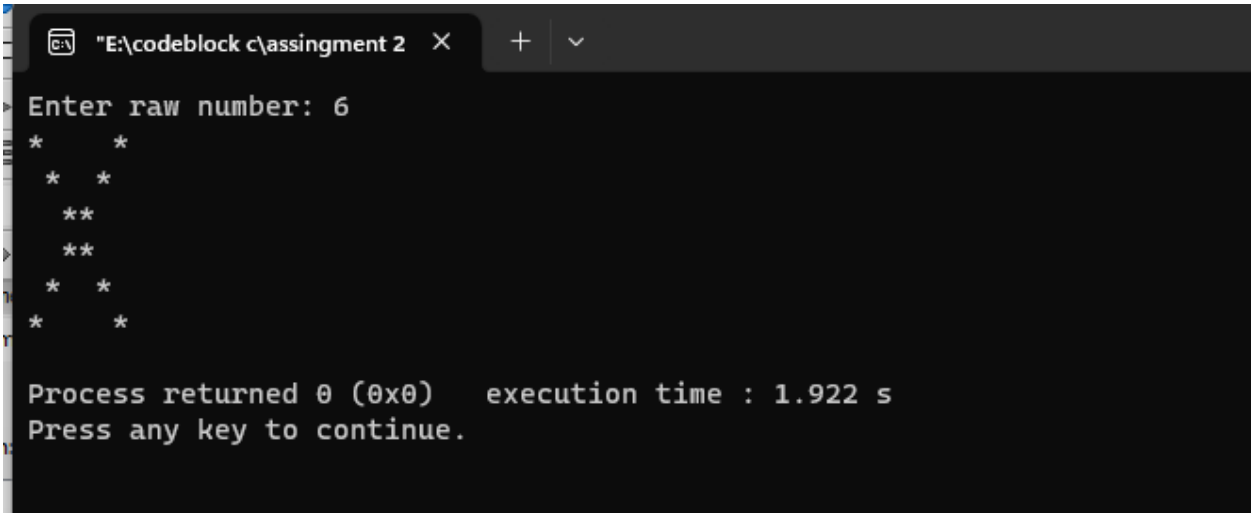
6. Pattern 6

```
#include<stdio.h>
int main()
{
   int r,c,n;
   printf("Enter raw number: ");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=n;c++)
         {
         if( r==1 || r==n || c==1 || c==n || c==r)
         printf(" *");

         else
         printf("  ");


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


"E:\codeblock c\assingment 2
Enter raw number: 6
* * * * * *
* *   *
*   *   *
*   *   *
*   * *
* * * * * *
Process returned 0 (0x0)   execution time : 1.000 s
Press any key to continue.

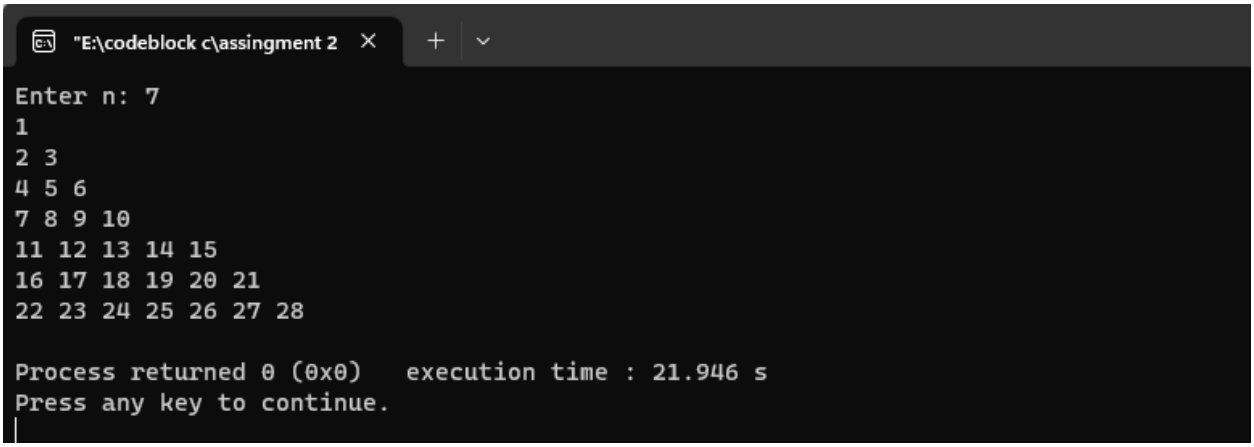
7. Pattern 7

```
#include<stdio.h>
int main()
{
   int r,c,n;
   printf("Enter raw number: ");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=n;c++)
         {
         if( r+c==n+1 || c==r)
         printf("*");

         else
         printf(" ");


      }
       printf("\n");
   }

}
```


"E:\codeblock c\assingment 2
Enter raw number: 6
*   *
 * *
  **
  **
 * *
*   *
Process returned 0 (0x0)   execution time : 1.922 s
Press any key to continue.

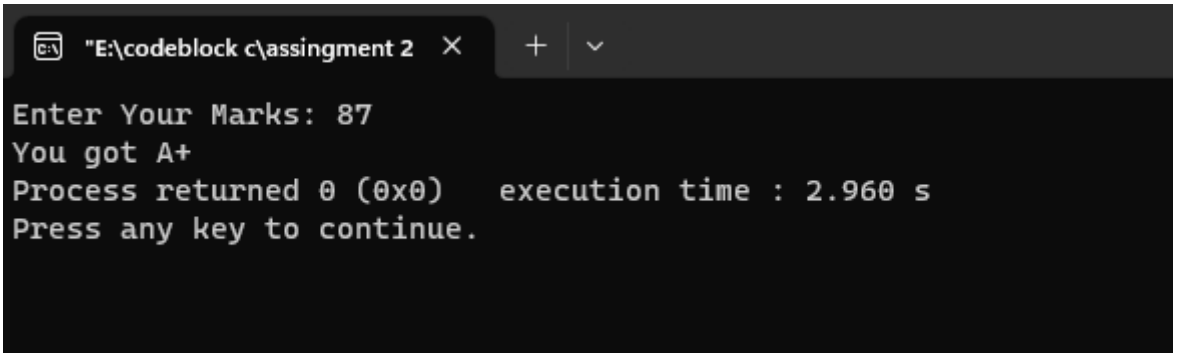
8. Pattern 8

```
#include<stdio.h>
int main()
{
   int n,r,c,count=0;
   printf("Enter n: ");
   scanf("%d",&n);
   for(r=1;r<=n;r++)
   {
      for(c=1;c<=r;c++)
        {
         count++;

         printf("%d ",count);
         }
         printf("\n");
   }

}
```



9. Point grading system

```
#include<stdio.h>
int main()
{
   int mark;
   printf("Enter Your Marks: ");
   scanf("%d",&mark);
   if (mark>=80)
      printf("You got A+");
   else if (mark>=70 && mark<<80)
      printf("You got A");
   else if (mark>=65&& mark<<70)
      printf("You got A-");
   else if (mark>=60&& mark<<65)
      printf("You got B");
   else if (mark>=50&& mark<<60)
      printf("You got C");
   else if (mark>=40&& mark<<50)
      printf("You got D");
   else if (mark>=33&& mark<<40)
      printf("You got E");
   else
      printf("Failed in exam");
}
```



10. SUM with pointer

```
#include<stdio.h>
int main()
{
   int x,y,sum;
   int *ptr1,*ptr2;
   printf("Enter two numbers: ");
   scanf("%d %d",&x,&y);
   ptr1=&x;
   ptr2=&y;
   sum= *ptr1 + *ptr2;
   printf("The sum is %d",sum);
}
```