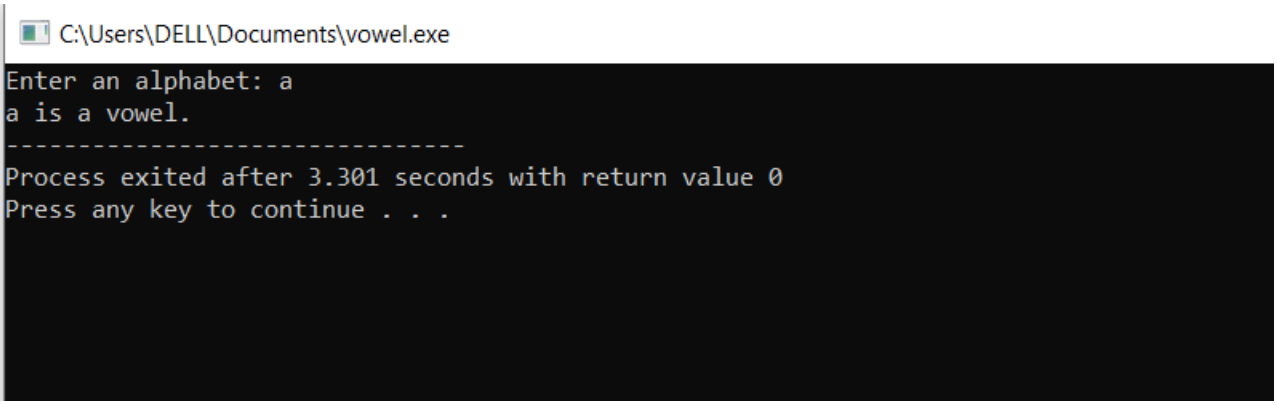
1. Check whether a character is a vowel or consonant.

```
#include <stdio.h>

int main()

{

   char c;

   int lowercase_vowel, uppercase_vowel;

   printf("Enter an alphabet: ");

   scanf("%c", &c);

   lowercase_vowel = (c == 'a' || c == 'e' || c == 'i' || c == 'o' || c == 'u');

   uppercase_vowel = (c == 'A' || c == 'E' || c == 'I' || c == 'O' || c == 'U');

   if (lowercase_vowel || uppercase_vowel)

      printf("%c is a vowel.", c);

   else

      printf("%c is a consonant.", c);

   return 0;

}
```

Output:

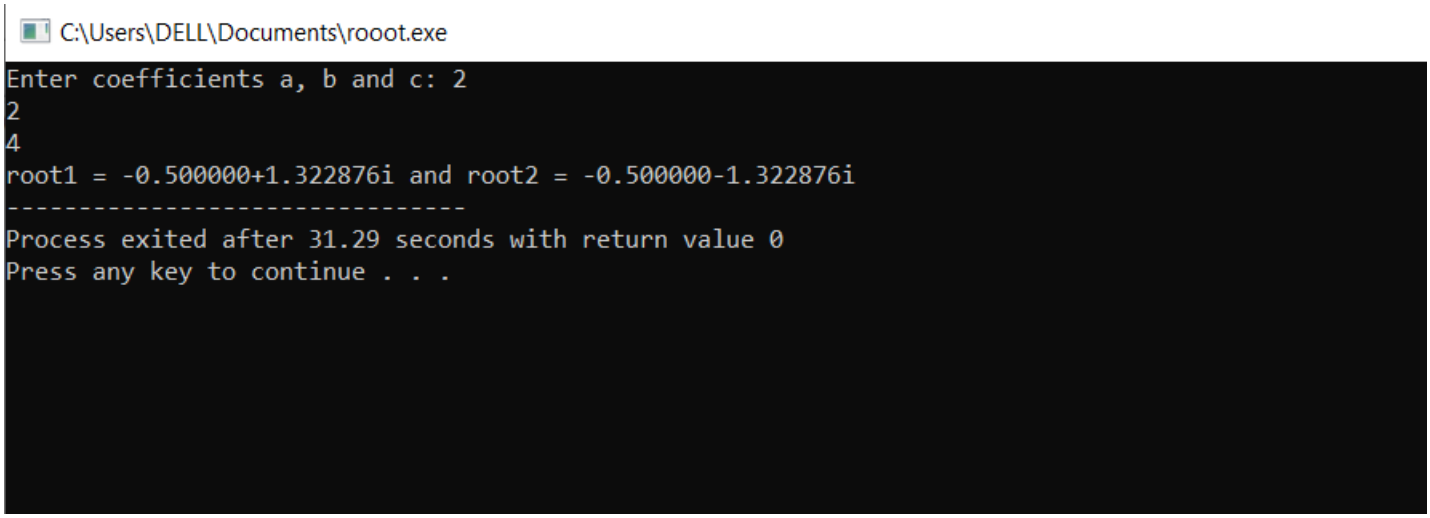


2. Find Roots of a Quadratic Equation (Using else if ladder).

```
#include <math.h>
```

```
#include <stdio.h>
int main() {
   float a, b, c, D, root1, root2, realPart, imagPart;
   printf("Enter coefficients a, b and c: ");
   scanf("%f %f %f", &a, &b, &c);
   D= b * b - 4 * a * c;
   if (D > 0) {
      root1 = (-b + sqrt(D)) / (2 * a);
      root2 = (-b - sqrt(D)) / (2 * a);
      printf("root1 = %f and root2 = %f", root1, root2);
   }
   else if (D == 0) {
      root1 = root2 = -b / (2 * a);
      printf("root1 = root2 = %f;", root1);
   }
   else {
      realPart = -b / (2 * a);
      imagPart = sqrt(-D) / (2 * a);
      printf("root1 = %f+%fi and root2 = %f-%fi", realPart, imagPart, realPart, imagPart);
   }
  return 0;
}
```

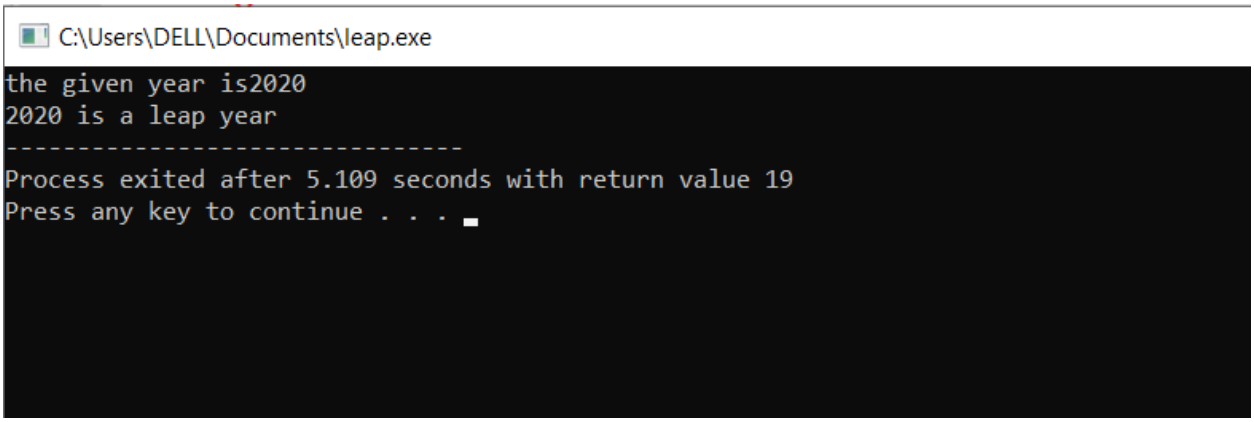
Output:



3. Check Leap Year (Using if..else)

```
#include<stdio.h>

void main()

{

        int y;

        printf("the given year is");

        scanf("%d",&y);

        if(y%4==0)


        {

        printf("%d is a leap year",y);

        }

         else

         {

                printf("%d is not a leap year",y);

         }

}
```

Output:

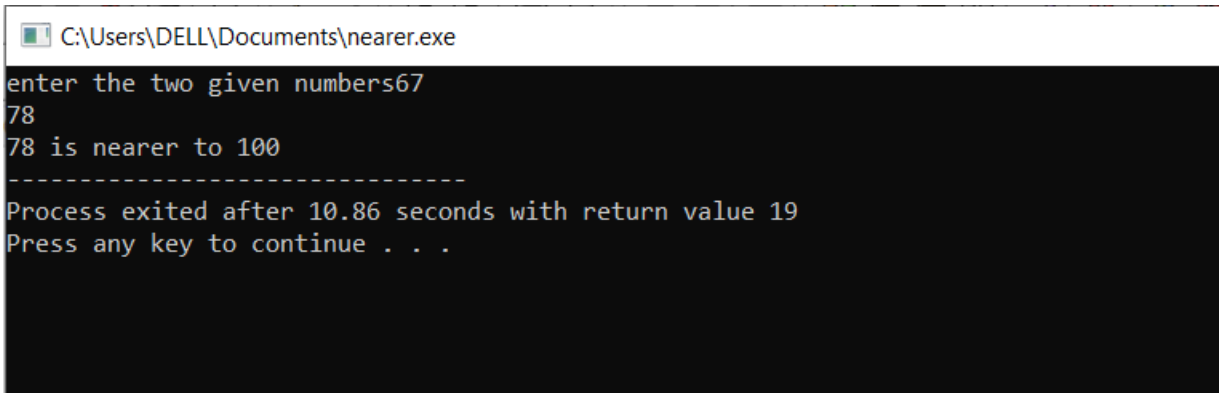


4. check which number nearest to the value 100 among two given integers. Return 0 if the two numbers are equal. (Using nested if…else)

```
#include<stdio.h>

void main()

{

        int x,y,val1,val2;

        printf("enter the two given numbers");

        scanf("%d%d",&x,&y);

        val1=100-x;

        val2=100-y;

        if(val1>val2)

        {

                printf("%d is nearer to 100",y);


        }

        Else

       {

                printf("%d is nearer to 100",x);
```

```
        }
}
```

Output:

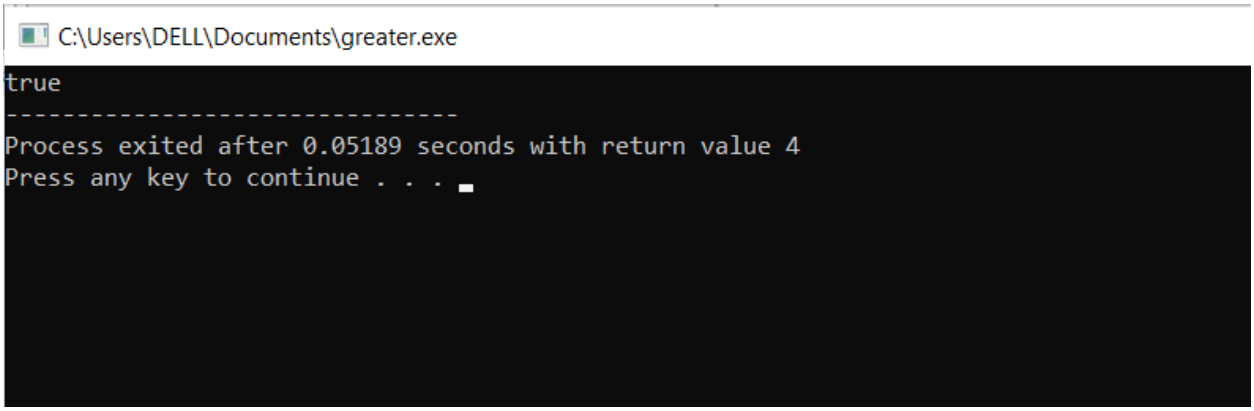


5. check three given integers (small, medium and large) and return true if the difference between small and medium and the difference between medium and large is same. (Using nested if…else)

```
#include<stdio.h>

void main()

{

        int a,b,c,D1,D2;

        a=12,b=24,c=36;

        D1=b-a;

        D2=c-b;

        if(D1>D2)

        {

                printf("difference between the first two digit is more");

        }

        else if(D1<D2)

        {

                printf("difference between the last two digit is more");
```

```
        }
        else if(D1==D2)
        {
        printf("true");
        }
}
```

Output:



6. Calculate and print the Electricity bill of a given customer. The customer id., name and unit consumed by the user should be taken from the keyboard and display the total amount to pay to the customer. The charge are as follow :

Unit	Charge/unit
Upto 199	@1.20
200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

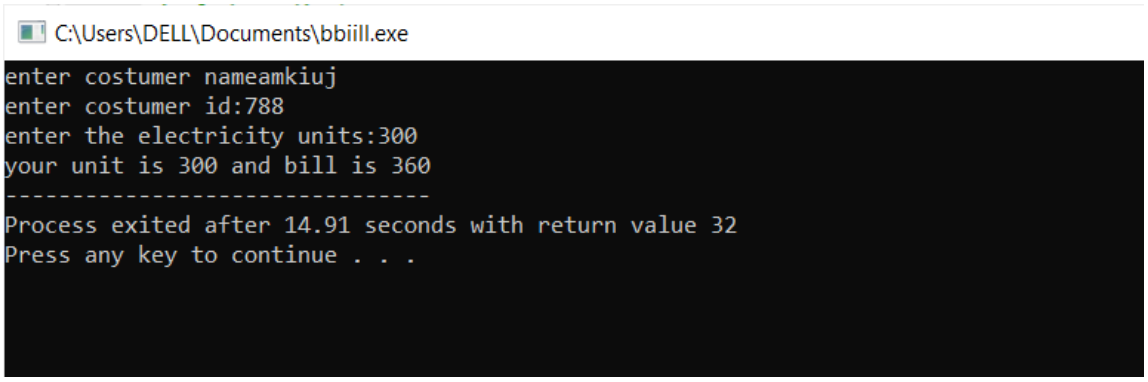
If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/- (Using else if ladder)

```
#include<stdio.h>
#include<string.h>
```

```
void main()
{
	char name[10];
	int id;
	int unit;
	float bill;
	float c1=1.20,c2=1.50,c3=1.80,c4=2.00;
	printf("enter costumer name");
	scanf("%s",&name);
	printf("enter costumer id:");
	scanf("%d",&id);
	printf("enter the electricity units:");
	scanf("%d",&unit);
	if(unit>=199)
	{
		bill=unit*c1;
		printf("your unit is %d and bill is %g",unit,bill);
	}
	else if(unit<100)
	{
		bill=100;
		printf("your unit is %d and bill is %g",unit,bill);
	}
	else if(unit>=200&&unit<=400)
	{
```

```
            bill=unit*c2;
            printf("your unit is %d and bill is %g",unit,bill);
        }
        else if(unit>=400&&unit<600)
        {
            bill=unit*c3;
            printf("your unit is %d and bill is %g",unit,bill);
        }
        else if(unit>=600)
        {
            bill=unit*c4;
            printf("your unit is %d and bill is %g",unit,bill);
        }
   else if(unit>400)
   {
        bill=bill+(bill*0.15);
        printf("your unit is %d and bill is %g",unit,bill);
        }
}
```

Output:



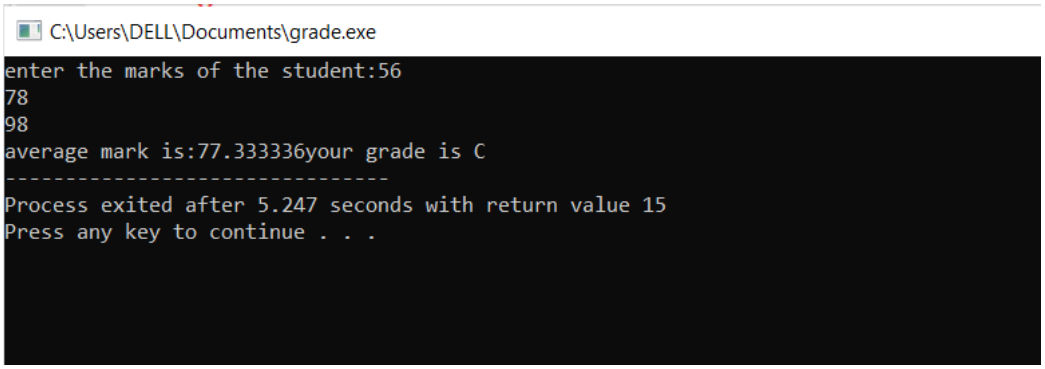
7. The marks obtained by a student in 3 different subjects are input by the user. Your program should calculate the average of subjects. The student gets a grade as per the following rules: (Using else if ladder)

Average	grade
90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

```
#include<stdio.h>

void main()

{

        float mark1,mark2,mark3,avg;

        printf("enter the marks of the student:");

        scanf("%f%f%f",&mark1,&mark2,&mark3);

        avg=(mark1+mark2+mark3)/3;

        printf("average mark is:%f",avg);

        if(avg>=90&&avg<=100)

        {

        printf("congrats your grade is :A");

        }

        else if(avg>=80&&avg<=89)

        {

                printf("congrats your grade is :B");

        }

        else if(avg>=70&&avg<=79)
```

```
        {
                printf("your grade is C");
        }
        else if(avg>=60&&avg<=69)
        {
                printf("your grade is D");
        }
        else if(avg>=0&&avg<=59)
        {
                printf("sorry!!your grade is F");
        }
```

Output:



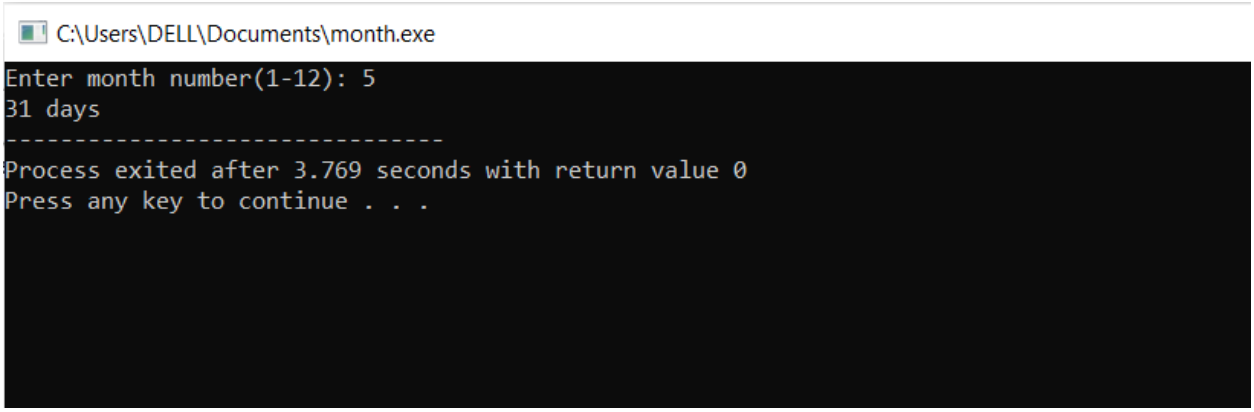
8. print total number of days in a month using switch case.

```
#include <stdio.h>


int main()
{
   int month;
   printf("Enter month number(1-12): ");
```

```
scanf("%d", &month);
switch(month)
{
   case 1:
      printf("31 days");
      break;
   case 2:
      printf("28/29 days");
      break;
   case 3:
      printf("31 days");
      break;
   case 4:
      printf("30 days");
      break;
   case 5:
      printf("31 days");
      break;
   case 6:
      printf("30 days");
      break;
   case 7:
      printf("31 days");
      break;
   case 8:
```

```
            printf("31 days");
            break;
        case 9:
            printf("30 days");
            break;
        case 10:
            printf("31 days");
            break;
        case 11:
            printf("30 days");
            break;
        case 12:
            printf("31 days");
            break;
        default:
            printf(" please enter the month number between 1-12");
      }
 return 0;
}
```

Output:

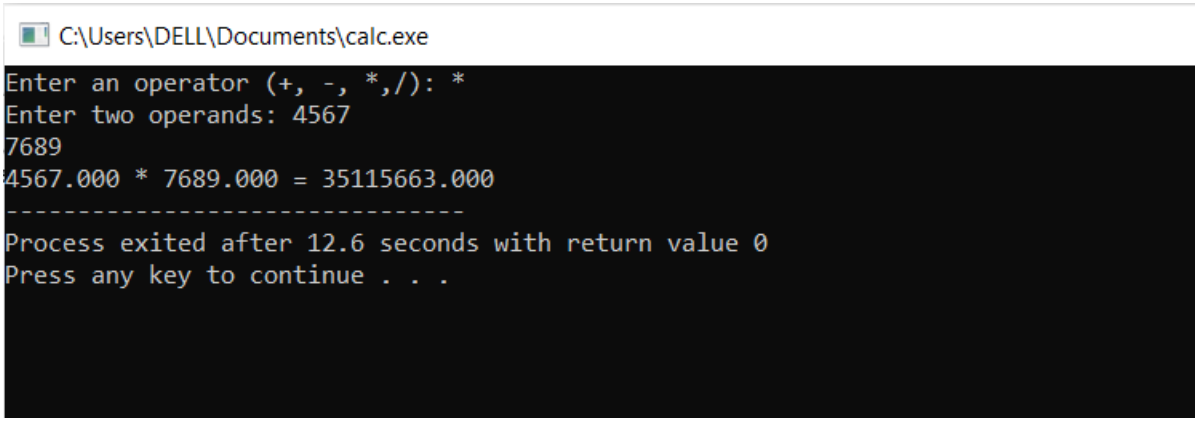


9. create Simple Calculator using switch case.

```
#include <stdio.h>

int main() {

   char operator;

   double num1,num2;

   printf("Enter an operator (+, -, *,/): ");

   scanf("%c", &operator);

   printf("Enter two operands: ");

   scanf("%lf %lf", &num1, &num2);


   switch (operator) {

   case '+':

      printf("%.3lf + %.3lf = %.3lf", num1, num2, num1 + num2);

      break;

   case '-':

      printf("%.3lf - %.3lf = %.3lf", num1, num2, num1 - num2);

      break;

   case '*':
```

```
        printf("%.3lf * %.3lf = %.3lf", num1, num2, num1 * num2);
        break;
    case '/':
        printf("%.3lf / %.3lf = %.3lf", num1, num2, num1 / num2);
        break;
        default:
        printf("Error! please enter valid operator");
    }
return 0;
}
```

Output:



10. Prompts the user to enter grade. Your program should display the corresponding meaning of grade as per the following table (Using Switch Case)

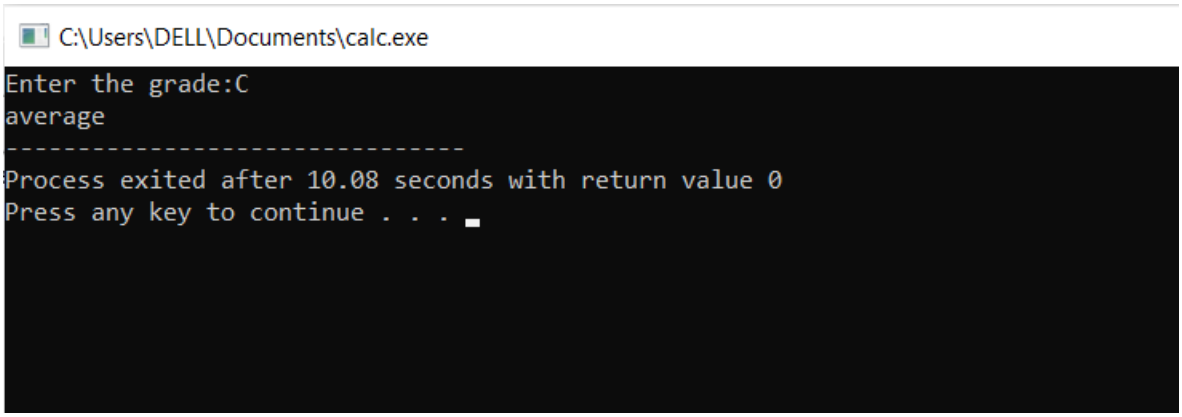
grade	meaning
A	Excellent
B	Good
C	Average
D	Deficient
F	failing

```
#include <stdio.h>

int main()
```

```
{
   char x;
   printf("Enter the grade:");
   scanf("%c", &x);
    switch (x)
{
   case 'A':
      printf("excellent");
      break;
   case 'B':
      printf("good");
      break;
   case 'C':
      printf("average");
      break;
   case 'D':
      printf("deficient");
      break;
   case 'F':
   printf("failing");
   break;
   default:
      printf("Error! please enter valid grade");
   }
 return 0;
```

}

Output:

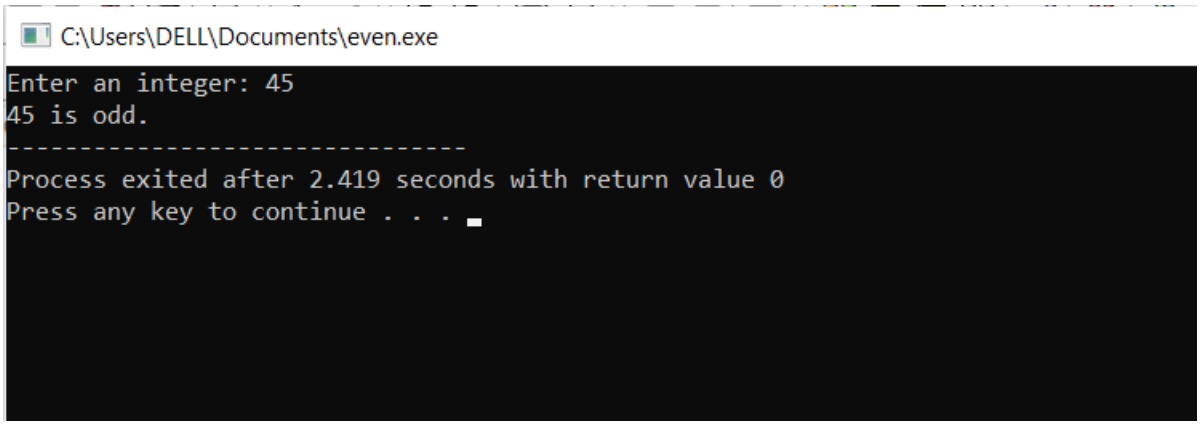


Practice questions:

12. Check Whether a Number is Even or Odd

```
#include <stdio.h>

int main() {

   int num;

   printf("Enter an integer: ");

   scanf("%d", &num);

   if(num % 2 == 0)

      printf("%d is even.", num);

   else

      printf("%d is odd.", num);

   return 0;

}
```

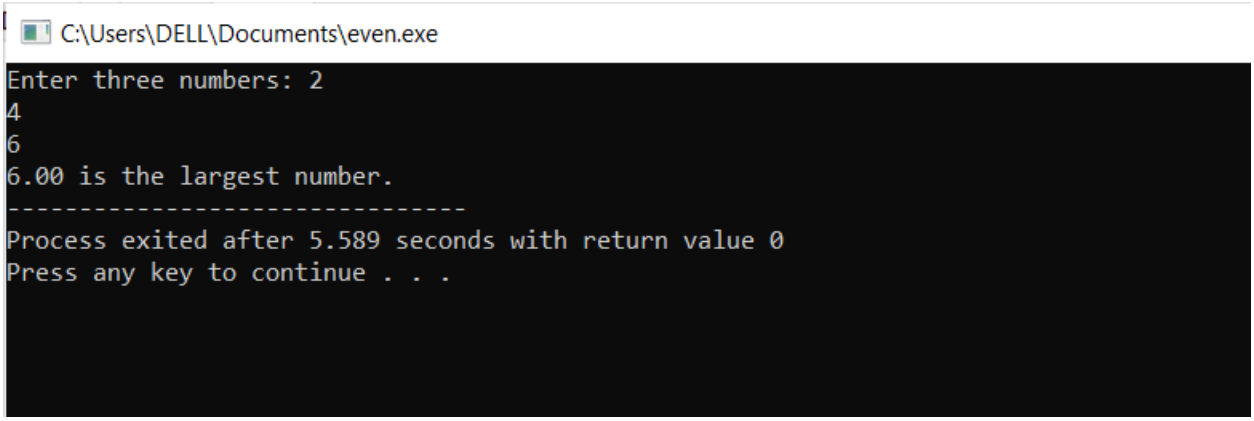
Output:



14. Find the Largest Number Among Three Numbers

```
#include <stdio.h>

int main() {

   double n1, n2, n3;

   printf("Enter three numbers: ");

   scanf("%lf %lf %lf", &n1, &n2, &n3);

   if (n1 >= n2 && n1 >= n3)

      printf("%.2lf is the largest number.", n1);

   else if (n2 >= n1 && n2 >= n3)

      printf("%.2lf is the largest number.", n2);

   else

      printf("%.2lf is the largest number.", n3);

 return 0;

}
```

Output:



19. print day of week name using switch case.

```
#include <stdio.h>

int main()

{

   int week;

    printf("Enter week number(1-7): ");

   scanf("%d", &week);

   switch(week)

   {

      case 1:

         printf("Monday");

         break;

      case 2:

         printf("Tuesday");

         break;

      case 3:

         printf("Wednesday");

         break;

      case 4:
```

```
            printf("Thursday");
            break;
        case 5:
            printf("Friday");
            break;
        case 6:
            printf("Saturday");
            break;
        case 7:
            printf("Sunday");
            break;
        default:
            printf("Invalid input! Please enter week number between 1-7.");
    }
    return 0;
}
```

Output: