

1–

```
#include <stdio.h>

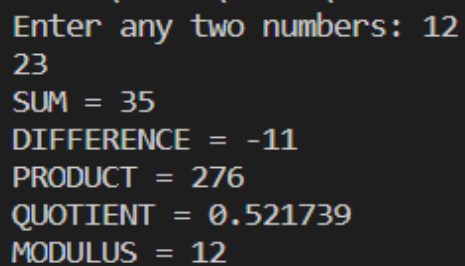
int main()
{
    int num1, num2;
    int sum, sub, mult, mod;
    float div;

    printf("Enter any two numbers: ");
    scanf("%d%d", &num1, &num2);

    sum = num1 + num2;
    sub = num1 - num2;
    mult = num1 * num2;
    div = (float)num1 / num2;
    mod = num1 % num2;

    printf("SUM = %d\n", sum);
    printf("DIFFERENCE = %d\n", sub);
    printf("PRODUCT = %d\n", mult);
    printf("QUOTIENT = %f\n", div);
    printf("MODULUS = %d", mod);

    return 0;
}
```



```
Enter any two numbers: 12
23
SUM = 35
DIFFERENCE = -11
PRODUCT = 276
QUOTIENT = 0.521739
MODULUS = 12
```

2

–

```
#include <stdio.h>

int main()
```

```

{

float base, height, area;

printf("Enter base of the triangle: ");

scanf("%f", &base);

printf("Enter height of the triangle: ");

scanf("%f", &height);

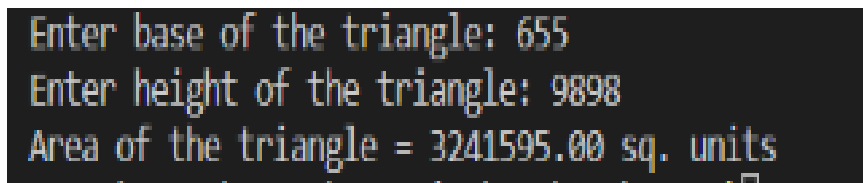
area = (base * height) / 2;

printf("Area of the triangle = %.2f sq. units", area);

return 0;

}

```



```

Enter base of the triangle: 655
Enter height of the triangle: 9898
Area of the triangle = 3241595.00 sq. units

```

3—

```

#include <stdio.h>

int main()

{

int a, b, c;

printf("Enter two angles of triangle: ");

scanf("%d%d", &a, &b);

c = 180 - (a + b);

printf("Third angle of the triangle = %d", c);

return 0;

}

```

```
Enter two angles of triangle: 42
```

```
45
```

```
Third angle of the triangle = 93
```

4--

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

```
int main()
```

```
{
```

```
int days, years, weeks;
```

```
printf("Enter days: ");
```

```
scanf("%d", &days);
```

```
years = (days / 365);
```

```
weeks = (days % 365) / 7;
```

```
days = days - ((years * 365) + (weeks * 7));
```

```
printf("YEARS: %d\n", years);
```

```
printf("WEEKS: %d\n", weeks);
```

```
printf("DAYS: %d", days);
```

```
return 0;
```

```
}
```

```
Enter days: 95555
```

```
YEARS: 261
```

```
WEEKS: 41
```

```
DAYS: 3
```

5--

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

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

```
int main()
```

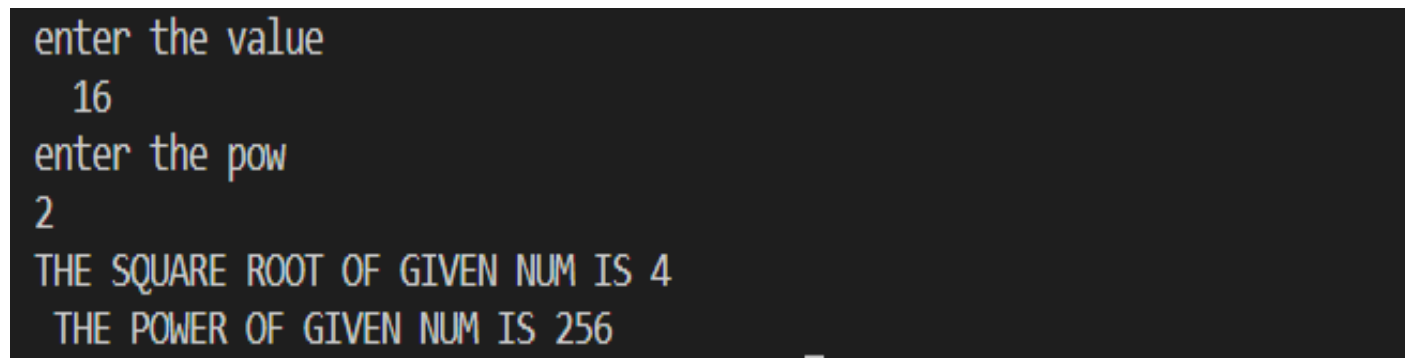
```
{
```

```

int sq,x,pw;

printf("enter the value\n ");
scanf("%d",&x);
printf("enter the pow\n");
scanf("%d",&pw);
int a=sqrt(x);
int b=pow(x,pw);
printf("THE SQUARE ROOT OF GIVEN NUM IS %d\n THE POWER OF GIVEN NUM IS %d",a,b);
return 0;
}

```



```

enter the value
16
enter the pow
2
THE SQUARE ROOT OF GIVEN NUM IS 4
THE POWER OF GIVEN NUM IS 256

```

6—

```

#include <stdio.h>

int main()
{
float eng, phy, chem, math, comp;
float total, average, percentage;
printf("Enter marks of five subjects: :- ");
scanf("%f%f%f%f%f", &eng, &phy, &chem, &math, &comp);
total = eng + phy + chem + math + comp;
average = total / 5.0;
percentage = (total / 500.0) * 100;
printf("Total marks = %.2f\n", total);
printf("Average marks = %.2f\n", average);
printf("Percentage = %.2f", percentage);
return 0;
}

```

```
Enter marks of five subjects: :- 36
63
48
89
47
Total marks = 283.00
Average marks = 56.60
Percentage = 56.60
```

7-

```
#include <stdio.h>

#define BITS sizeof(int)

int main()
{
    int num, msb;
    printf("Enter any number: ");
    scanf("%d", &num);
    msb = 1 << (BITS - 1);
    if(num & msb)
        printf("MSB of %d is set (1).", num);
    else
        printf("MSB of %d is unset (0).", num);
    return 0;
}
```

```
Enter any number: 5
MSB of 5 is unset (0).
```

8-

```
#include <stdio.h>

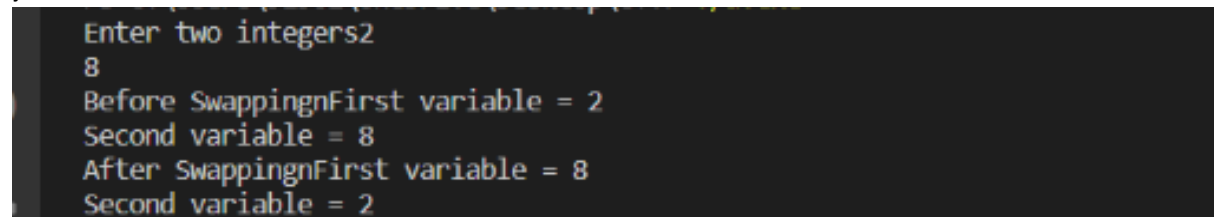
int main()
{
    int var1, var2, temp;
```

```

printf("Enter two integers ");
scanf("%d%d", &var1, &var2);
printf("Before Swapping\nFirst variable = %d\nSecond variable = %d\n", var1, var2);
temp = var1;
var1 = var2;
var2 = temp;
printf("After Swapping\nFirst variable = %d\nSecond variable = %d\n", var1, var2);

return 0;
}

```



```

Enter two integers2
8
Before Swapping\nFirst variable = 2
Second variable = 8
After Swapping\nFirst variable = 8
Second variable = 2

```

9—

```

#include<stdio.h>

int main() {
    int a, b, c, max;
    printf("Enter Three Integers\n");
    scanf("%d %d %d", &a, &b, &c);
    max = (a > b) ? ((a > c) ? a : c) : ((b > c) ? b : c);
    printf("Maximum Number is = %d\n", max);
    return 0;
}

```



```

Enter Three Integers
8
6
4
Maximum Number is = 8

```

10

```

#include <stdio.h>

int main()
{

```

```

char ch;

printf("Enter any character: ");

scanf("%c", &ch);

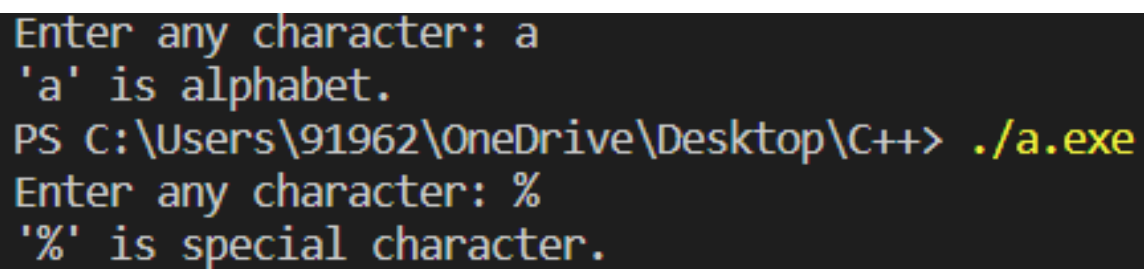
if((ch >= 'a' && ch <= 'z') || (ch >= 'A' && ch <= 'Z'))
{
    printf("%c is alphabet.", ch);
}

else if(ch >= '0' && ch <= '9')
{
    printf("%c is digit.", ch);
}

else
{
    printf("%c is special character.", ch);
}

return 0;
}

```



```

Enter any character: a
'a' is alphabet.
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter any character: %
'% is special character.

```

11—

```

#include <stdio.h>

int main()
{
    int unit;

    float amt, total_amt, sur_charge;

    printf("Enter total units consumed: ");

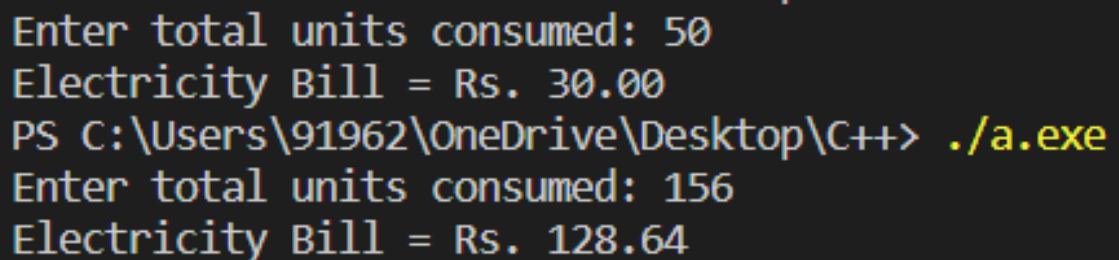
    scanf("%d", &unit);

```

```

if(unit <= 50)
{
amt = unit * 0.50;
}
else if(unit <= 150)
{
amt = 25 + ((unit-50) * 0.75);
}
else if(unit <= 250)
{
amt = 100 + ((unit-150) * 1.20);
}
else
{
amt = 220 + ((unit-250) * 1.50);
}
sur_charge = amt * 0.20;
total_amt = amt + sur_charge;
printf("Electricity Bill = Rs. %.2f", total_amt);
return 0;
}

```



```

Enter total units consumed: 50
Electricity Bill = Rs. 30.00
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter total units consumed: 156
Electricity Bill = Rs. 128.64

```

12-

```

#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;
}
```

Enter week number(1-7): 5
Friday

13-

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

```
int main()
```

```
{
```

```
char ch;
```

```
printf("Enter any alphabet: ");
```

```
scanf("%c", &ch);
```

```
switch(ch)
```

```
{
```

```
case 'a':
```

```
printf("Vowel");
```

```
break;
```

```
case 'e':
```

```
printf("Vowel");
```

```
break;
```

```
case 'i':
```

```
printf("Vowel");
```

```
break;
```

```
case 'o':
```

```
printf("Vowel");
```

```
break;
```

```
case 'u':
```

```
printf("Vowel");
```

```
break;
```

```
case 'A':
```

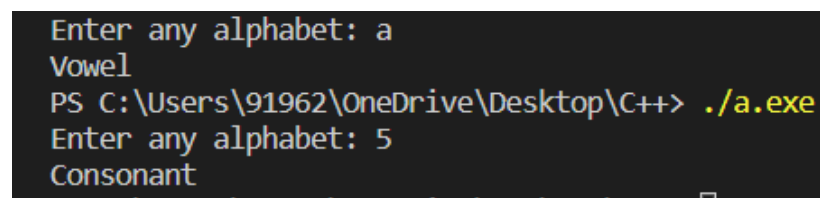
```
printf("Vowel");
```

```
break;
```

```

case 'E':
printf("Vowel");
break;
case 'I':
printf("Vowel");
break;
case 'O':
printf("Vowel");
break;
case 'U':
printf("Vowel");
break;
default:
printf("Consonant");
}
return 0;
}

```



```

Enter any alphabet: a
Vowel
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter any alphabet: 5
Consonant

```

14—

```

#include <stdio.h>

int main()
{
int num;

printf("Enter any number: ");

scanf("%d", &num);

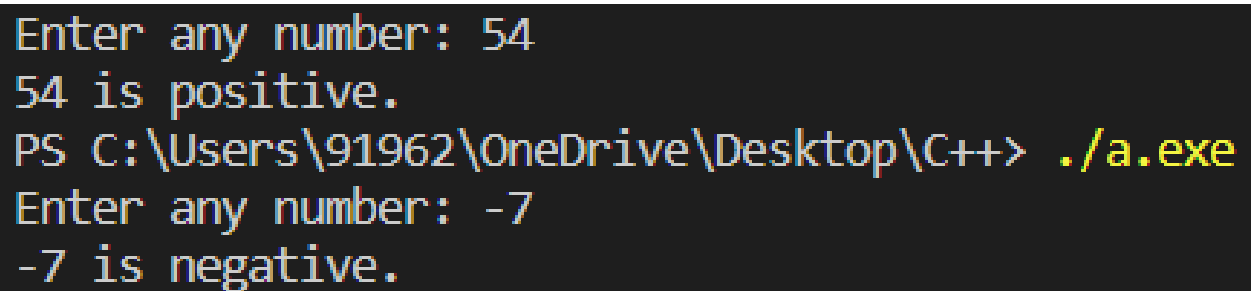
switch (num > 0)
{

```

```

case 1:
printf("%d is positive.", num);
break;
case 0:
switch (num < 0)
{
case 1:
printf("%d is negative.", num);
break;
case 0:
printf("%d is zero.", num);
break;
}
break;
}
return 0;
}

```



```

Enter any number: 54
54 is positive.
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter any number: -7
-7 is negative.

```

15–

```

#include<stdio.h>

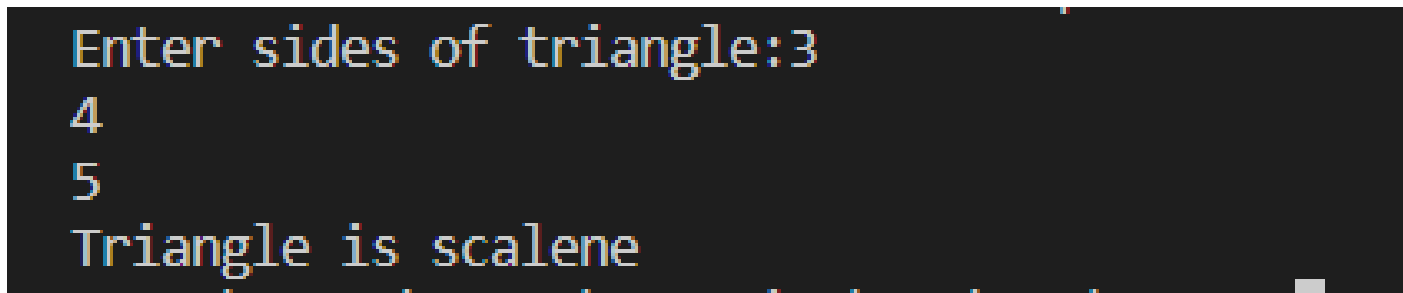
int main(){
int side1, side2, side3;
printf("Enter sides of triangle:");
scanf("%d%d%d",&side1,&side2,&side3);
if(side1 == side2 && side2 == side3)
printf("Triangle is equilateral");
else if(side1 == side2 || side2 == side3 || side3 == side1)

```

```

printf("Triangle is isosceles");
else
printf("Triangle is scalene");
return 0;
}

```



```

Enter sides of triangle:3
4
5
Triangle is scalene

```

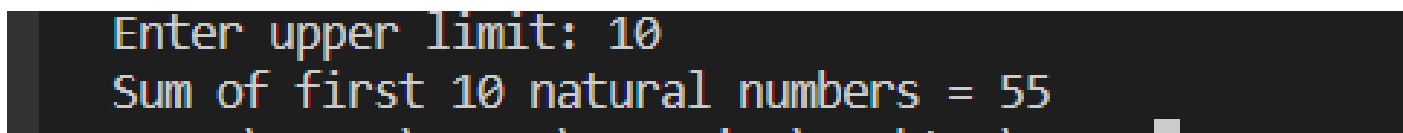
16—

```

#include <stdio.h>

int main()
{
int i, n, sum=0;
printf("Enter upper limit: ");
scanf("%d", &n);
for(i=1; i<=n; i++)
{
sum += i;
}
printf("Sum of first %d natural numbers = %d", n, sum);
return 0;
}

```



```

Enter upper limit: 10
Sum of first 10 natural numbers = 55

```

17--

```

#include <stdio.h>

```

```

int main()
{
int i, n;
printf("Print all even numbers till: ");
scanf("%d", &n);
printf("Even numbers from 1 to n %d are: \n", n);
for(i=1; i<=n; i++)
{
if(i%2 == 0)
{
printf("%d\n", i);
}
}
return 0;
}

```

AND

```

#include <stdio.h>

int main()
{
int i, n, sum=0;
printf("Enter upper limit: ");
scanf("%d", &n);
for(i=2; i<=n; i+=2)
{
sum += i;
}
printf("Sum of all even number between 1 to n %d = %d", n, sum);
return 0;
}

```

Even numbers from 1 to n 7 are:

2
4
6

18—

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

```
int main()
```

```
{
```

```
int i, num;
```

```
printf("Enter number to print table: ");
```

```
scanf("%d", &num);
```

```
for(i=1; i<=10; i++)
```

```
{
```

```
printf("%d * %d = %d\n", num, i, (num*i));
```

```
}
```

```
return 0;
```

```
}
```

Enter number to print table: 8

8 * 1 = 8
8 * 2 = 16
8 * 3 = 24
8 * 4 = 32
8 * 5 = 40
8 * 6 = 48
8 * 7 = 56
8 * 8 = 64
8 * 9 = 72
8 * 10 = 80

19—

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

```
int main(){
```

```
int x,fact=1,n;
```

```
printf("Enter a number to find factorial: ");
```

```
scanf("%d",&n);
```

```

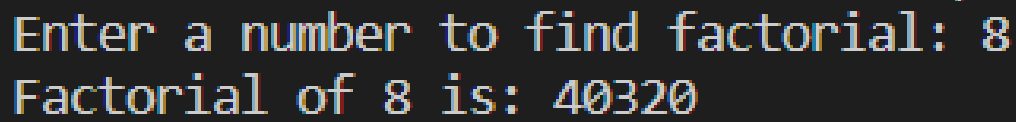
for(x=1;x<=n;x++)
fact=fact*x;

printf("Factorial of %d is: %d",n,fact);

return 0;

}

```



```

Enter a number to find factorial: 8
Factorial of 8 is: 40320

```

20—

```

#include <stdio.h>

int main() {

int n, reversed = 0, remainder, original;

printf("Enter an integer: ");

scanf("%d", &n);

original = n;

while (n != 0) {

remainder = n % 10;

reversed = reversed * 10 + remainder;

n /= 10;

}

if (original == reversed)

printf("%d is a palindrome.", original);

else

printf("%d is not a palindrome.", original);

return 0;

}

```



```
Enter an integer: 9
9 is a palindrome.
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter an integer: 741
741 is not a palindrome.
```

21-

```
#include <stdio.h>

#define BASE 10

int main()
{
    long long num, n;
    int i, lastDigit;
    int freq[BASE];
    printf("Enter any number: ");
    scanf("%lld", &num);
    for(i=0; i<BASE; i++)
    {
        freq[i] = 0;
    }
    n = num;
    while(n != 0)
    {
        lastDigit = n %10;
        n /= 10;
        freq[lastDigit]++;
    }
    printf("Frequency of each digit in %lld is: \n", num);
    for(i=0; i<BASE; i++)
    {
        printf("Frequency of %d = %d\n", i, freq[i]);
    }
    return 0;
}
```

}

```
Enter any number: 45
Frequency of each digit in 45 is:
Frequency of 0 = 0
Frequency of 1 = 0
Frequency of 2 = 0
Frequency of 3 = 0
Frequency of 4 = 1
Frequency of 5 = 1
Frequency of 6 = 0
Frequency of 7 = 0
Frequency of 8 = 0
Frequency of 9 = 0
```

22—

```
#include <stdio.h>

int main() {
    int a, b, x, y, t, gcd, lcm;
    printf("Enter two integers\n");
    scanf("%d%d", &x, &y);
    a = x;
    b = y;
    while (b != 0) {
        t = b;
        b = a % b;
        a = t;
    }
    gcd = a;
    lcm = (x*y)/gcd;
    printf("Greatest common divisor of %d and %d = %d\n", x, y, gcd);
    printf("Least common multiple of %d and %d = %d\n", x, y, lcm);
    return 0;
}
```

```
Enter two integers
3
8
Greatest common divisor of 3 and 8 = 1
Least common multiple of 3 and 8 = 24
```

23—

```
#include<stdio.h>

int main(){
    int num,i,count,n;
    printf("Enter max range: ");
    scanf("%d",&n);
    for(num = 1;num<=n;num++){
        count = 0;
        for(i=2;i<=num/2;i++){
            if(num%i==0){
                count++;
                break;
            }
        }
        if(count==0 && num!= 1)
            printf("%d ",num);
    }
    return 0;
}
```

```
Enter max range: 80
2 3 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79
```

24—

```
#include <stdio.h>

int main()
{
    int n;
    int sum=0;
```

```
printf("Enter a number");

scanf("%d",&n);

int k=n;

int r;

while(k!=0)

{

r=k%10;

int f=fact(r);

k=k/10;

sum=sum+f;

}

if(sum==n)

{

printf("\nNumber is a strong");

}

else

{

printf("\nNumber is not a strong");

}

return 0;

}

int fact(int r)

{

int mul=1;

for(int i=1;i<=r;i++)

{

mul=mul*i;

}

return mul;

}
```

```
Enter a number10

Number is not a strong
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter a number1

Number is a strong
```

25—

```
#include<stdio.h>

int main()
{
    int n1=0,n2=1,n3,i,number;
    printf("Enter the number of elements:");
    scanf("%d",&number);
    printf("\n%d %d",n1,n2);
    for(i=2;i<number;++i)
    {
        n3=n1+n2;
        printf(" %d",n3);
        n1=n2;
        n2=n3;
    }
    return 0;
}
```

```
Enter the number of elements:10

0 1 1 2 3 5 8 13 21 34
```

26—

```
#include<stdio.h>

int main()
{
```

```

int n,r,sum=0,temp;
printf("enter the number=");
scanf("%d",&n);
temp=n;
while(n>0)
{
r=n%10;
sum=sum+(r*r*r);
n=n/10;
}
if(temp==sum)
printf("armstrong number ");
else
printf("not armstrong number");
return 0;
}

```

enter the number=2
not armstrong number

27—

```

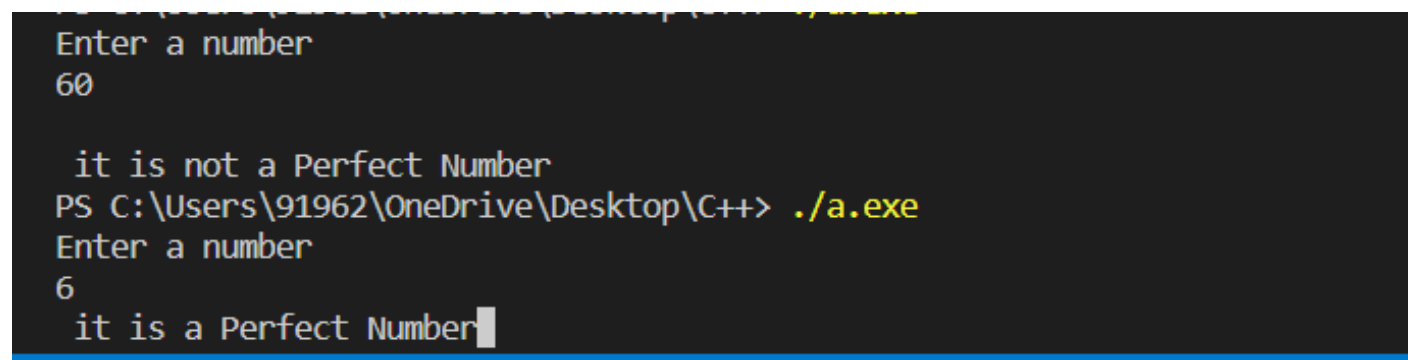
#include<stdio.h>
#include<conio.h>
void main()
{
int num, rem, sum = 0, i;
printf("Enter a number\n");
scanf("%d", &num);
for(i = 1; i < num; i++)
{
rem = num % i;

```

```

if (rem == 0)
{
sum = sum + i;
}
}
if (sum == num)
printf(" it is a Perfect Number");
else
printf("\n it is not a Perfect Number");
getch();
}

```



```

Enter a number
60

it is not a Perfect Number
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter a number
6
it is a Perfect Number

```

28—

```

#include <stdio.h>

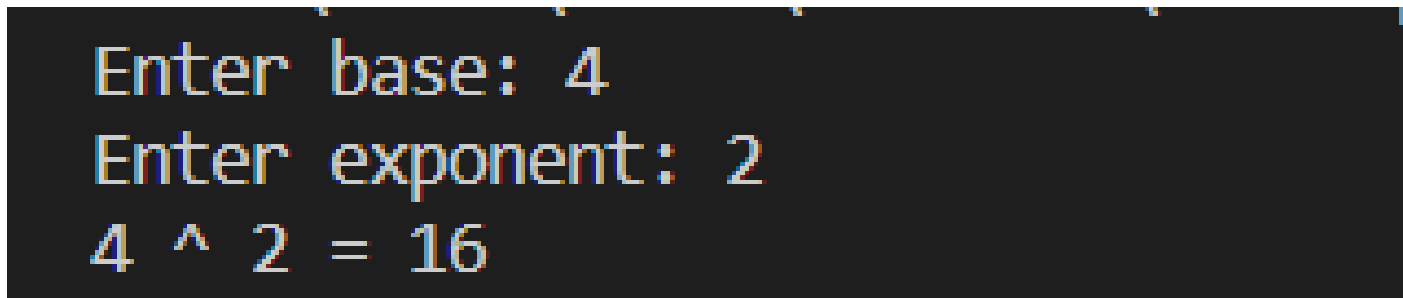
int main()
{
int base, exponent;
long long power = 1;
int i;
printf("Enter base: ");
scanf("%d", &base);
printf("Enter exponent: ");
scanf("%d", &exponent);
for(i=1; i<=exponent; i++)
{

```

```

power = power * base;
}
printf("%d ^ %d = %lld", base, exponent, power);
return 0;
}

```



```

Enter base: 4
Enter exponent: 2
4 ^ 2 = 16

```

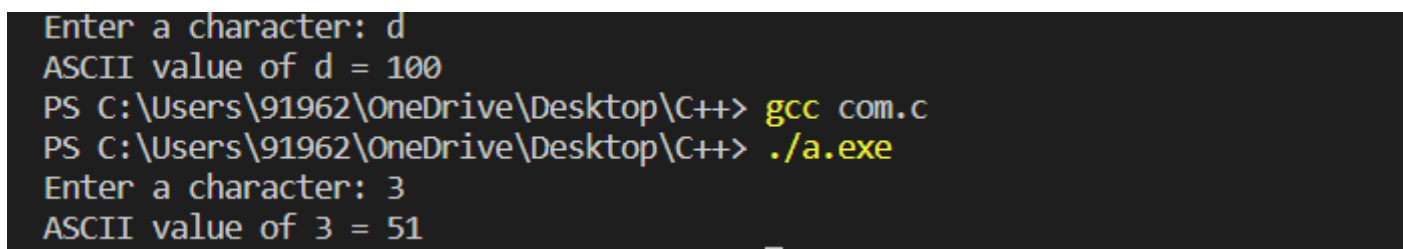
29—

```

#include <stdio.h>

int main() {
    char c;
    printf("Enter a character: ");
    scanf("%c", &c);
    printf("ASCII value of %c = %d", c, c);
    return 0;
}

```



```

Enter a character: d
ASCII value of d = 100
PS C:\Users\91962\OneDrive\Desktop\C++> gcc com.c
PS C:\Users\91962\OneDrive\Desktop\C++> ./a.exe
Enter a character: 3
ASCII value of 3 = 51

```

30—

```

#include <stdio.h>

int getFactorial(int n);

int main()
{

```



```

int row, rows, i, value;

printf("Enter Number of Rows:");

scanf("%d", &rows);

for(row = 0; row < rows; row++)
{
    for(i = row; i <= rows; i++)
    printf(" ");
    for(i = 0; i <= row; i++)
    {
        value = getFactorial(row)/(getFactorial(i)*getFactorial(row-i));
        printf("%4d", value);
    }
    printf("\n");
}

return 0;
}

int getFactorial(int N){
    if(N < 0){
        printf("Invalid Input: factorial not defined for \
negative numbers\n");
        return 0;
    }

    int nFactorial = 1, counter;
    for(counter = 1; counter <= N; counter++){
        nFactorial = nFactorial * counter;
    }

    return nFactorial;
}

```

```
Enter Number of Rows:3
```

```
1
1 1
1 2 1
```

31—

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

```
int main()
```

```
{
```

```
int arr[100], size, i, sum = 0;
```

```
printf("Enter array size=");
```

```
scanf("%d",&size);
```

```
printf("Enter array elements=");
```

```
for(i = 0; i < size; i++)
```

```
scanf("%d",&arr[i]);
```

```
for(i = 0; i < size; i++) sum = sum + arr[i];
```

```
printf("Sum of the array = %d\n",sum);
```

```
return 0;
```

```
}
```

```
Enter array elements=4
```

```
1
```

```
2
```

```
3
```

```
4
```

```
Sum of the array = 14
```

32—

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

```
int main()
```

```
{
```

```
int i, Size, a[20], b[20];
```

```
printf("\n Please Enter the Array Size \n");
```

```
scanf("%d", &Size);
```

```
printf("\n Please Enter the Array Elements \n");
```

```

for(i = 0; i < Size; i++)
{
scanf("%d", &a[i]);
}

for(i = 0; i < Size; i++)
{
b[i] = a[i];
}

printf("\n Elements of Second Array are: \n");

for(i = 0; i < Size; i++)
{
printf("\n Value Inside Array b[%d] = %d", i, b[i]);
}

return 0;;
}

```

```

Elements of Second Array are:
Value Inside Array b[0] = 1
Value Inside Array b[1] = 2
Value Inside Array b[2] = 3
Value Inside Array b[3] = 4
Value Inside Array b[4] = 8
Value Inside Array b[5] = 95

```

33—

```

#include <stdio.h>

int main()
{
int arr[100] = { 0 };
int i, x, pos, n = 10;
for (i = 0; i < 10; i++)
arr[i] = i + 1;
for (i = 0; i < n; i++)
printf("%d ", arr[i]);
printf("\n");

```

```

x = 50;

pos = 5;

n++;

for (i = n - 1; i >= pos; i--)
arr[i] = arr[i - 1];

arr[pos - 1] = x;

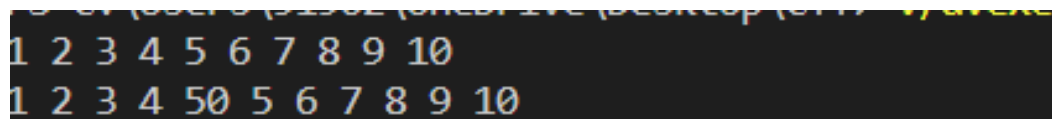
for (i = 0; i < n; i++)
printf("%d ", arr[i]);

printf("\n");

return 0;

}

```



```

1 2 3 4 5 6 7 8 9 10
1 2 3 4 50 5 6 7 8 9 10

```

34—

```

#include <stdio.h>

#define MAX_SIZE 100

int main()
{
int arr[MAX_SIZE];

int i, size, pos;

printf("Enter size of the array : ");

scanf("%d", &size);

printf("Enter elements in array : ");

for(i=0; i<size; i++)
{
scanf("%d", &arr[i]);
}

printf("Enter the element position to delete : ");

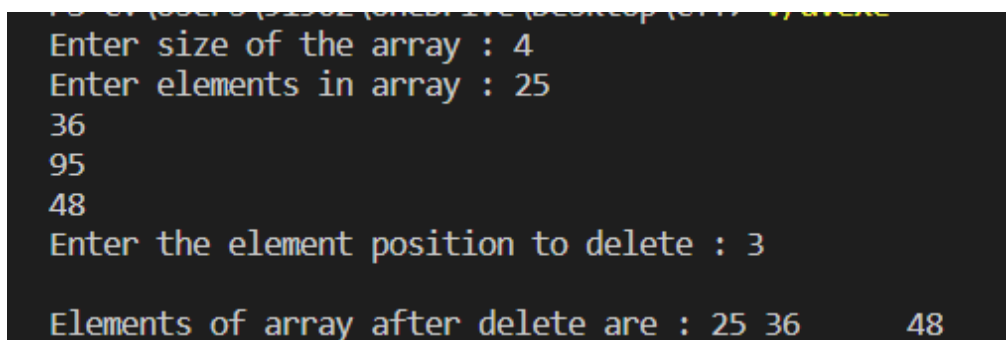
scanf("%d", &pos);

```

```

if(pos < 0 || pos > size)
{
printf("Invalid position! Please enter position between 1 to %d", size);
}
else
{
for(i=pos-1; i<size-1; i++)
{
arr[i] = arr[i + 1];
}
size--;
printf("\nElements of array after delete are : ");
for(i=0; i<size; i++)
{
printf("%d\t", arr[i]);
}
}
return 0;
}

```



```

Enter size of the array : 4
Enter elements in array : 25
36
95
48
Enter the element position to delete : 3

Elements of array after delete are : 25 36 48

```

35—

```

#include <stdio.h>

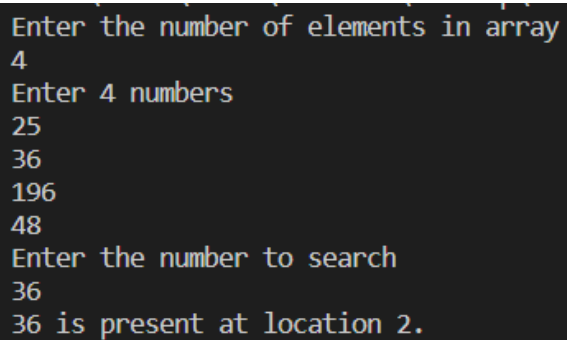
int main()
{
int array[100], search, c, number;

```

```

printf("Enter the number of elements in array\n");
scanf("%d",&number);
printf("Enter %d numbers\n", number);
for ( c = 0 ; c < number ; c++ )
scanf("%d",&array[c]);
printf("Enter the number to search\n");
scanf("%d",&search);
for ( c = 0 ; c < number ; c++ )
{
if ( array[c] == search ) /* if required element found */
{
printf("%d is present at location %d.\n", search, c+1);
break;
}
}
if ( c == number )
printf("%d is not present in array.\n", search);
return 0;
}

```



```

Enter the number of elements in array
4
Enter 4 numbers
25
36
196
48
Enter the number to search
36
36 is present at location 2.

```

36—

```

#include <stdio.h>

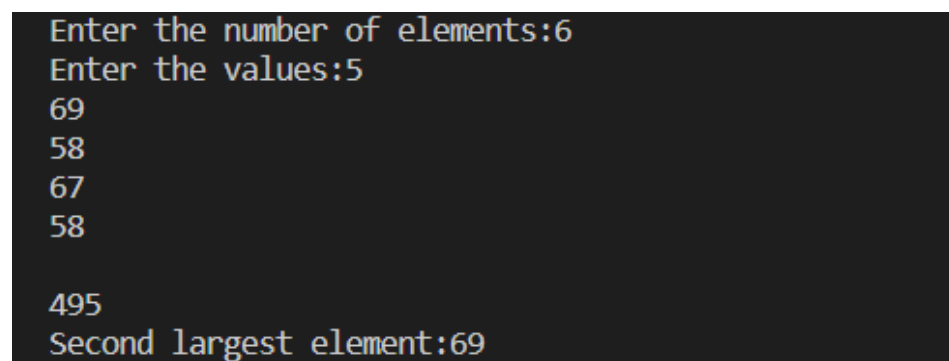
void main()
{
int a[100],i,j,n,temp;

```

```

printf("Enter the number of elements:");
scanf("%d",&n);
printf("Enter the values:");
for (i=0;i<n;i++){
scanf("%d",&a[i]);
}
for(i=0;i<n;i++)
{
for(j=i+1;j<n;j++)
{
if(a[i]>a[j])
{
temp = a[i];
a[i]=a[j];
a[j]=temp;
}
}
}
printf("Second largest element:%d",a[n-2]);
}

```



```

Enter the number of elements:6
Enter the values:5
69
58
67
58

495
Second largest element:69

```

37—

```

#include <stdio.h>

#define MAX_SIZE 100

int main()

```

```

{
int arr[MAX_SIZE];
int i, j, size, count = 0;
printf("Enter size of the array : ");
scanf("%d", &size);
printf("Enter elements in array : ");
for(i=0; i<size; i++)
{
scanf("%d", &arr[i]);
}
for(i=0; i<size; i++)
{
for(j=i+1; j<size; j++)
{
if(arr[i] == arr[j])
{
count++;
break;
}
}
}
printf("\nTotal number of duplicate elements found in array = %d", count);
return 0;
}

```

```

Enter size of the array : 5
Enter elements in array : 48
25
36
25
36

Total number of duplicate elements found in array = 2

```



```

#include <stdio.h>

#define SIZE 3

int main()
{
    int A[SIZE][SIZE];
    int num, row, col;

    printf("Enter elements in matrix of size %dx%d: \n", SIZE, SIZE);
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            scanf("%d", &A[row][col]);
        }
    }

    printf("Enter any number to multiply with matrix A: ");
    scanf("%d", &num);

    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            A[row][col] = num * A[row][col];
        }
    }

    printf("\nResultant matrix c.A = \n");
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            printf("%d ", A[row][col]);
        }
    }

    printf("\n");
}

```

```

}
return 0;
}

```

```

Enter elements in matrix of size 3x3:
4
5
8
69
7
8
4
5
6
Enter any number to multiply with matrix A: 45

Resultant matrix c.A =
180 225 360
3105 315 360
180 225 270

```

39—

```

#include <stdio.h>

#define SIZE 3

int main()
{
    int A[SIZE][SIZE];
    int row, col, sum = 0;
    printf("Enter elements in matrix of size %dx%d: \n", SIZE, SIZE);
    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)
        {
            scanf("%d", &A[row][col]);
        }
    }
    for(row=0; row<SIZE; row++)
    {
        sum = sum + A[row][row];
    }
}

```

```

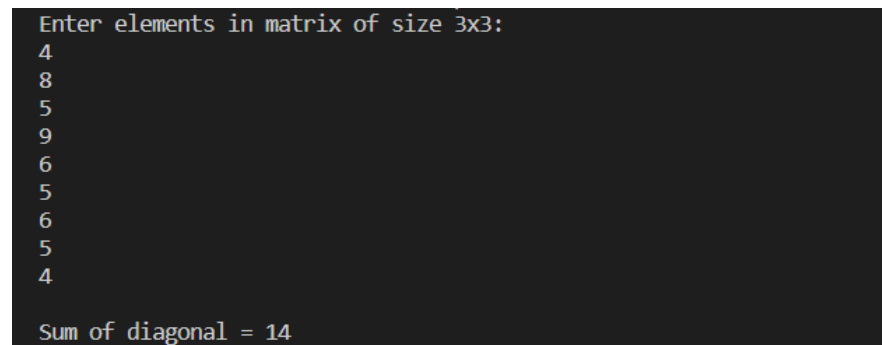
}

printf("\nSum of diagonal = %d", sum);

return 0;

}

```



```

Enter elements in matrix of size 3x3:
4
8
5
9
6
5
6
5
4

Sum of diagonal = 14

```

40–

```

#include <stdio.h>

int main() {
    int a[10][10], transpose[10][10], r, c;
    printf("Enter rows and columns: ");
    scanf("%d %d", &r, &c);
    printf("\nEnter matrix elements:\n");
    for (int i = 0; i < r; ++i)
        for (int j = 0; j < c; ++j) {
            printf("Enter element a%d%d: ", i + 1, j + 1);
            scanf("%d", &a[i][j]);
        }
    printf("\nEnter matrix: \n");
    for (int i = 0; i < r; ++i)
        for (int j = 0; j < c; ++j) {
            printf("%d ", a[i][j]);
            if (j == c - 1)
                printf("\n");
        }
    for (int i = 0; i < r; ++i)

```

```

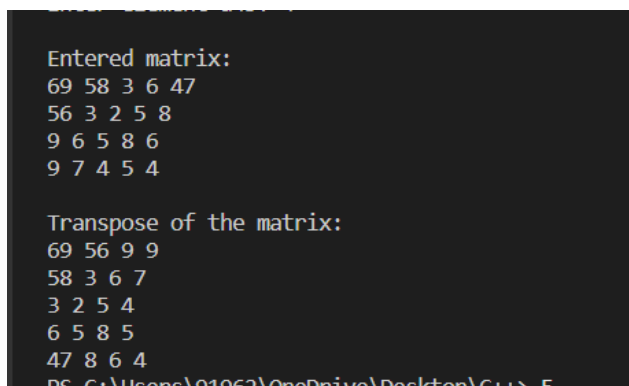
for (int j = 0; j < c; ++j) {
    transpose[j][i] = a[i][j];
}

printf("\nTranspose of the matrix:\n");

for (int i = 0; i < c; ++i)
    for (int j = 0; j < r; ++j) {
        printf("%d ", transpose[i][j]);
        if (j == r - 1)
            printf("\n");
    }

return 0;
}

```



```

Entered matrix:
69 58 3 6 47
56 3 2 5 8
9 6 5 8 6
9 7 4 5 4

Transpose of the matrix:
69 56 9 9
58 3 6 7
3 2 5 4
6 5 8 5
47 8 6 4

```

41—

```

#include <stdio.h>

#define SIZE 3

int main()
{
    int A[SIZE][SIZE];
    int row, col, isIdentity;

    printf("Enter elements in matrix 3x3: \n");

    for(row=0; row<SIZE; row++)
    {
        for(col=0; col<SIZE; col++)

```

```

{
scanf("%d", &A[row][col]);
}
}

isIdentity = 1;
for(row=0; row<SIZE; row++)
{
for(col=0; col<SIZE; col++)
{
if(row==col && A[row][col]!=1)
{
isIdentity = 0;
}
else if(row!=col && A[row][col]!=0)
{
isIdentity = 0;
}
}
}

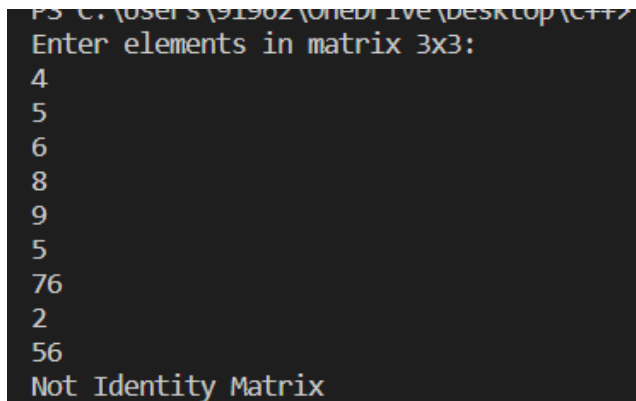
if(isIdentity == 1)
{
printf("\nAn Identity Matrix.\n");
for(row=0; row<SIZE; row++)
{
for(col=0; col<SIZE; col++)
{
printf("%d ", A[row][col]);
}
printf("\n");
}
}
}

```

```

else
{
printf("Not Identity Matrix");
}
return 0;
}

```



PS C:\Users\91962\OneDrive\Desktop\C++>
Enter elements in matrix 3x3:
4
5
6
8
9
5
76
2
56
Not Identity Matrix

42--

```

#include <stdio.h>
#include <stdlib.h>

int main(void)
{
int i, n, j, k;
printf("Enter the size of the first array: ");
scanf("%d", &n);
int arr1[n];
printf("Enter the elements of the first array: \n");
for (i = 0; i < n; i++)
{
scanf("%d", &arr1[i]);
}
printf("Enter the size of the second array: ");
scanf("%d", &k);
int arr2[k];

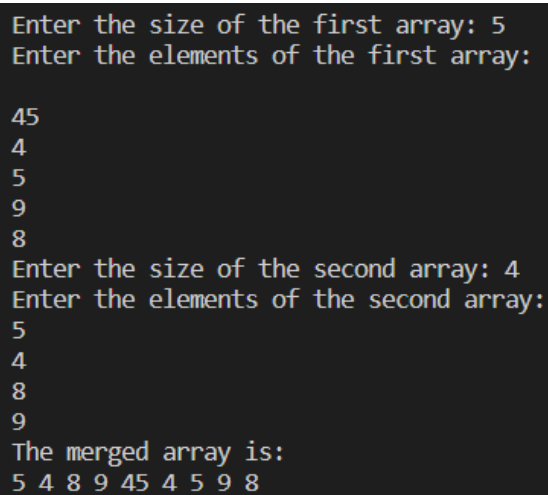
```

```
printf("Enter the elements of the second array: \n");  
for (j = 0; j < k; j++)  
{  
scanf("%d", &arr2[j]);  
}  
int arr3[n + k];  
i = j = 0;  
int in;  
for (in = 0; in < n + k; in ++)  
{  
if (i < n && j < k)  
{  
if (arr1[i] < arr2[j])  
{  
arr3[in] = arr1[i];  
i++;  
}  
else  
{  
arr3[in] = arr2[j];  
j++;  
}  
}  
else if (i < n)  
{  
arr3[in] = arr1[i];  
i++;  
}  
else  
{  
arr3[in] = arr2[j];
```

```

j++;
}
}
printf("The merged array is: \n");
for (in = 0; in < n + k; in++)
{
printf("%d ", arr3[in]);
}
printf("\n");
return 0;
}

```



```

Enter the size of the first array: 5
Enter the elements of the first array:
45
4
5
9
8
Enter the size of the second array: 4
Enter the elements of the second array:
5
4
8
9
The merged array is:
5 4 8 9 45 4 5 9 8

```

43—

```

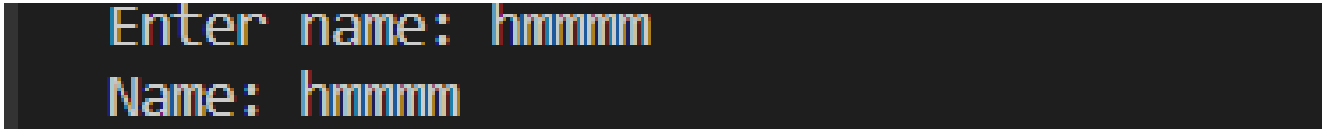
#include<stdio.h>

int main()
{
char name[30];
printf("Enter name: ");
gets(name); //Function to read string from user.
printf("Name: ");
puts(name); //Function to display string.
return 0;
}

```



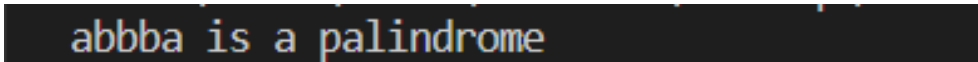
```
}
```



```
Enter name: hmmmm
Name: hmmmm
```

44—

```
#include <stdio.h>
#include <string.h>
int main()
{
    char str[] = { "abbba" };
    int l = 0;
    int h = strlen(str) - 1;
    while (h > l) {
        if (str[l++] != str[h--]) {
            printf("%s is not a palindrome\n", str);
            return 0;
        }
    }
    printf("%s is a palindrome\n", str);
    return 0;
}
```



```
abbba is a palindrome
```

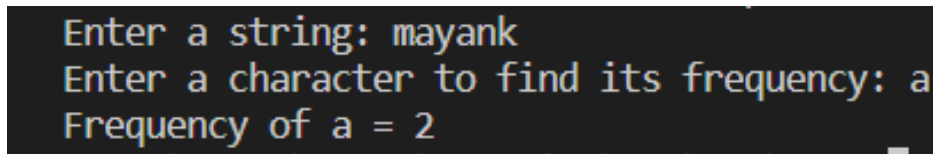
45—

```
#include <stdio.h>
int main() {
    char str[1000], ch;
    int count = 0;
    printf("Enter a string: ");
    fgets(str, sizeof(str), stdin);
```

```

printf("Enter a character to find its frequency: ");
scanf("%c", &ch);
for (int i = 0; str[i] != '\0'; ++i) {
    if (ch == str[i])
        ++count;
}
printf("Frequency of %c = %d", ch, count);
return 0;
}

```



```

Enter a string: mayank
Enter a character to find its frequency: a
Frequency of a = 2

```

46—

```

#include <stdio.h>

int main()
{
    float radius, diameter, circumference, area;
    printf("Enter radius of circle: ");
    scanf("%f", &radius);
    diameter = 2 * radius;
    circumference = 2 * 3.14 * radius;
    area = 3.14 * (radius * radius);
    printf("Diameter of circle = %.2f units \n", diameter);
    printf("Circumference of circle = %.2f units \n", circumference);
    printf("Area of circle = %.2f sq. units ", area);
    return 0;
}

```

```
Enter radius of circle: 45
Diameter of circle = 90.00 units
Circumference of circle = 282.60 units
Area of circle = 6358.50 sq. units
```

47—

```
#include <stdio.h>

#include <math.h>

int isPrime(int num);

int isArmstrong(int num);

int isPerfect(int num);

int main()
{
    int num;

    printf("Enter any number: ");
    scanf("%d", &num);

    if(isPrime(num))
    {
        printf("%d is Prime number.\n", num);
    }
    else
    {
        printf("%d is not Prime number.\n", num);
    }

    if(isArmstrong(num))
    {
        printf("%d is Armstrong number.\n", num);
    }
    else
    {
        printf("%d is not Armstrong number.\n", num);
    }

    if(isPerfect(num))
```

```

{
printf("%d is Perfect number.\n", num);
}
else
{
printf("%d is not Perfect number.\n", num);
}
return 0;
}

int isPrime(int num)
{
int i;
for(i=2; i<=num/2; i++)
{
if(num%i == 0)
{
return 0;
}
}
return 1;
}

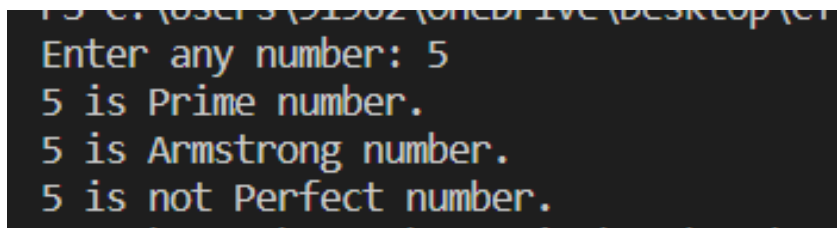
int isArmstrong(int num)
{
int lastDigit, sum, originalNum, digits;
sum = 0;
originalNum = num;
digits = (int) log10(num) + 1;
while(num > 0)
{
lastDigit = num % 10;
sum = sum + round(pow(lastDigit, digits));

```

```

num = num / 10;
}
return (originalNum == sum);
}
int isPerfect(int num)
{
int i, sum, n;
sum = 0;
n = num;
for(i=1; i<n; i++)
{
if(n%i == 0)
{
sum += i;
}
}
return (num == sum);
}

```



The screenshot shows the output of a C program for the number 5. The text displayed is:

Enter any number: 5

5 is Prime number.

5 is Armstrong number.

5 is not Perfect number.

48—

```

#include <stdio.h>

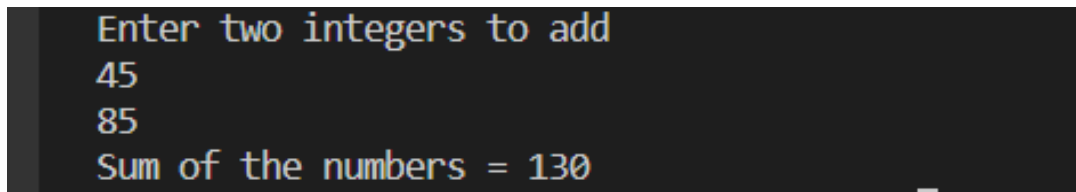
int main()
{
int first, second, *p, *q, sum;
printf("Enter two integers to add\n");
scanf("%d%d", &first, &second);
p = &first;

```

```

q = &second;
sum = *p + *q;
printf("Sum of the numbers = %d\n", sum);
return 0;
}

```



```

Enter two integers to add
45
85
Sum of the numbers = 130

```

49—

```

#include<stdio.h>

void swap(int *,int *);

void main( )
{
    int n1,n2;
    printf("Enter the two numbers to be swapped\n");
    scanf("%d%d",&n1,&n2);
    printf("\nThe values of n1 and n2 in the main function before calling the swap function are
    n1=%d n2=%d",n1,n2);
    swap(&n1,&n2);
    printf("\nThe values of n1 and n2 in the main function after calling the swap function are
    n1=%d n2=%d",n1,n2);
}

void swap(int *n1,int *n2)
{
    int temp;
    temp=*n1;
    *n1=*n2;
    *n2=temp;
    printf("\nThe values of n1 and n2 in the swap function after swapping are n1=%d

```

```
n2=%d",*n1,*n2);
}
```

```
Enter the two numbers to be swapped
45
65

The values of n1 and n2 in the main function before calling the swap function are n1=45 n2=65
The values of n1 and n2 in the swap function after swapping are n1=65 n2=45
The values of n1 and n2 in the main function after calling the swap function are n1=65 n2=45
```

50–

```
#include <stdio.h>

#define MAX_SIZE 100

void printArray(int arr[], int size);

int main()
{
    int source_arr[MAX_SIZE], dest_arr[MAX_SIZE];
    int size, i;
    int *source_ptr = source_arr;
    int *dest_ptr = dest_arr;
    int *end_ptr;

    printf("Enter size of array: ");
    scanf("%d", &size);
    printf("Enter elements in array: ");
    for (i = 0; i < size; i++)
    {
        scanf("%d", (source_ptr + i));
    }

    end_ptr = &source_arr[size - 1];
    printf("\nSource array before copying: ");
    printArray(source_arr, size);
    printf("\nDestination array before copying: ");
    printArray(dest_arr, size);
    while(source_ptr <= end_ptr)
```

```

{
*dest_ptr = *source_ptr;
source_ptr++;
dest_ptr++;
}

printf("\n\nSource array after copying: ");
printArray(source_arr, size);
printf("\nDestination array after copying: ");
printArray(dest_arr, size);
return 0;
}

void printArray(int *arr, int size)
{
int i;
for (i = 0; i < size; i++)
{
printf("%d, ", *(arr + i));
}
}

```

AND

```

#include <stdio.h>

#define MAX_SIZE 100

void printArr(int *arr, int size);

int main()
{
int arr[MAX_SIZE];
int size;
int *left = arr;
int *right;
printf("Enter size of array: ");
scanf("%d", &size);

```



```
right = &arr[size - 1];
printf("Enter elements in array: ");
while(left <= right)
{
scanf("%d", left++);
}
printf("\nArray before reverse: ");
printArr(arr, size);
left = arr;
while(left < right)
{
*left ^= *right;
*right ^= *left;
*left ^= *right;
left++;
right--;
}
printf("\nArray after reverse: ");
printArr(arr, size);
return 0;
}

void printArr(int * arr, int size)
{
int * arrEnd = (arr + size - 1);
while(arr <= arrEnd)
{
printf("%d, ", *arr);
arr++;
}
}
```

```
Enter size of array: 4
Enter elements in array: 5
6
3

2

Source array before copying: 5, 6, 3, 2,
Destination array before copying: 2002224077, -32, 0, 29889504,

Source array after copying: 5, 6, 3, 2,
Destination array after copying: 5, 6, 3, 2,
```

51—

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

```
int main()
```

```
{
```

```
int i, j, N;
```

```
printf("Enter number of rows: ");
```

```
scanf("%d", &N);
```

```
for(i=1; i<=N; i++)
```

```
{
```

```
for(j=1; j<=N; j++)
```

```
{
```

```
printf("*");
```

```
}
```

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

```
}
```

```
return 0;
```

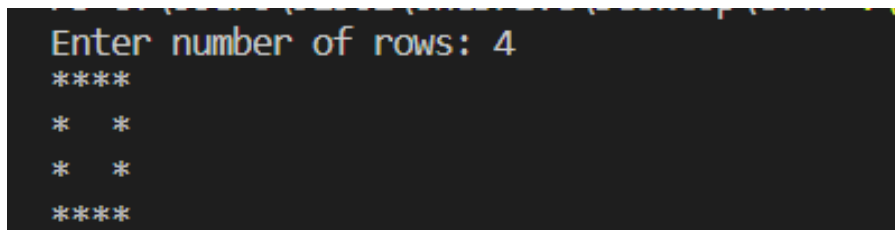
```
}
```

```
Enter number of rows: 4
****
****
****
****
```

52—

```
#include <stdio.h>

int main()
{
    int i, j, N;
    printf("Enter number of rows: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=1; j<=N; j++)
        {
            if(i==1 || i==N || j==1 || j==N)
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}
```



```
Enter number of rows: 4
****
*   *
*   *
****
```

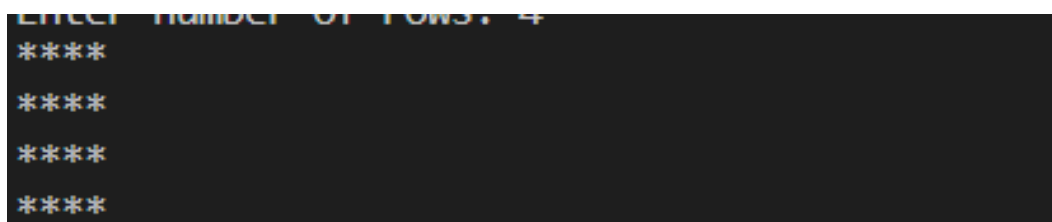
53—

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

```

int main()
{
    int i, j, N;
    printf("Enter number of rows: ");
    scanf("%d", &N);
    for(i=1; i<=N; i++)
    {
        for(j=1; j<=N; j++)
        {
            if(i==1 || i==N || j==1 || j==N || i==j || j==(N - i + 1))
            {
                printf("*");
            }
            else
            {
                printf(" ");
            }
        }
        printf("\n");
    }
    return 0;
}

```



```

Enter number of rows: 4
****
****
****
****

```

54—

```

#include <stdio.h>

int main()
{

```

```

int i, j, rows;

printf("Enter rows: ");

scanf("%d", &rows);

for(i=1; i<=rows; i++)
{
    for(j=1; j<=rows - i; j++)
    {
        printf(" ");
    }
    for(j=1; j<=rows; j++)
    {
        printf("*");
    }
    printf("\n");
}

return 0;
}

```



55—

```

#include <stdio.h>

int main()
{
    int i, j, rows;

    printf("Enter rows : ");

    scanf("%d", &rows);

    for(i=1; i<=rows; i++)

```

```

{
for(j=1; j<=rows-i; j++)
{
printf(" ");
}
for(j=1; j<=rows; j++)
{
if(i==1 || i==rows || j==1 || j==rows)
printf("*");
else
printf(" ");
}
printf("\n");
}
return 0;
}

```

