

① while-Loop.

```
while (Logical expression) {  
    statement  
}
```

**Example:** - write a C program to print the integer between  
1 → 10000

```
#include <stdio.h>  
int main() {  
    int counter = 1;
```

```
    while (counter <= 10000) {
```

```
        printf ("%d \n", counter);
```

```
        ++ counter; → counter = counter + 1
```

```
    }
```

```
    return 0;
```

```
}
```

counter + - 1

counter + +

write a c programme to find the average of ten grades:

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

```
int counter = 1
double grade;
double avg, sum;
```

```
while (counter <= 10) {
```

```
printf (" please enter the grade ");
scanf ("%lf", &grade);
```

```
sum += grade; // sum = sum + grade;
```

```
counter = counter + 1;
```

```
}
```

```
avg = sum / 10;
```

مجموع  
الدرجات  
المتوسط  
=  $\frac{\text{sum}}{10}$

```
printf ("%lf is %0.2f", avg);
```

```
return 0;
```

```
}
```

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write C program to calculate the avg for unknown number of grades, your program should stop when -1 grade entered.

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

```
int main() {
```

```
int counter = 1;
```

```
double sum, grade, avg;
```

```
printf (" please enter the grade ");
```

```
scanf ("%lf", & grade);
```

```
while ( grade != -1)
```

```
sum += grade;
```

```
counter = counter + 1;
```

```
printf (" please enter the next grade ");
```

```
scanf ("%lf", & grade);
```

```
}
```

```
if (counter != -1) {
```

```
avg =  $\frac{\text{sum}}{\text{counter}}$ ;
```

```
printf (" avg is %.2f", avg);
```

```
else
```

```
printf (" Dont play grade ");
```

```
}
```

```
return 0;
```

```
}
```

write a c program to find the number of odd and even in a any given integer.

```
#include <stdio.h>
int main() {
    int number, odd-counter=0, even-counter=0,
    int d;
    printf("please enter the number\n");
    scanf("%d", &number);

    while (number >= 0) {
        d = number % 10;
        if (d % 2 == 0)
            ++counter-even;
        else
            ++counter-odd;

        number = number / 10;
    }
    printf("number of even is %d", counter-even);
    printf("number of odd is %d", counter-odd);

    return 0;
}
```



write a c programme to calculate the sum of a set of value of values, when the sum reaches 1000 this means that program should stop receiving data, and print the number of value were entered?

```
#include <stdio.h>
int main() {
    int sum = 0, counter = 0, x;
    while (sum <= 1000) {
        printf("please enter the value");
        scanf("%d", &x);
        sum += x;
        counter++;
    }
    printf("Number of value = %d", counter);
    return 0;
}
```

## For Loop

```
for ( ① initial statement; ② Logical expression; ④ steps ) {  
    ③ statements;  
}
```

② → non zero ✓ for  
④ → zero Exit the Loop ✗ for

**Example:** write a C programme to print integers between 1-10000?

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

```
int main() {
```

```
int counter;
```

```
for ( counter = 1; counter <= 10000; counter++ ) {
```

```
    printf ("%d\n", counter);
```

```
}
```

```
return 0;
```

```
}
```



write a c programme to find if an entered number is perfect or not;

$$6 = 1 + 2 + 3 \quad \checkmark$$

```
#include <stdio.h>
int main() {
    int num, rem, sum=0, i;
    printf (" please enter the number ");
    scanf ("%d", &num);
    for (i=1, i < num; i++) {
        rem = num % i;
        if (rem == 0) {
            sum = sum + i;
        }
    }
    if (sum == num)
        printf ("%d is perfect number", num);
    else
        printf ("%d is Not perfect number", num);
    return 0;
}
```

u.p

write a c programme to find the factorial for a given integer

$$n! = n \times n-1 \times n-2 \dots 1.$$

```
#include <stdio.h>
int factorial (int n);
int main() {
    int n;
    int result;
    printf (" please enter the number ");
    scanf ("%d", &n);
```

```
    result = factorial (n);
```

```
    printf (" Result is %d", result);
    return 0;
}
```

```
int factorial (int n) {
    int result = 1;
    int i;
    for (i = 1; i <= n; i++)
        result = result * i;
    return result;
}
```



write a c program to find the power (x,y)  $x^y$

x and y are integers } = 0

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

```
int x, y, result;
printf("please enter the numbers");
scanf("%d %d", &x, &y);
```

```
result = power(x, y);
printf("Result is %d", result);
```

```
return 0;
```

```
}
```

```
int power(int x, int y) {
int i;
int result = 1;
```

```
for (i = 1, i <= y, i++) =>  $i=1$   
 $result = 1 \times 5 = 5$ 
```

```
result = result * x;
```

$i=2$

```
return result;
```

$result = 5 \times 5 = 25$

$i=3$

$result = 25 \times 5 = 125$

```
}
```

write a c program to find  $x^y$ ?

```
#include <stdio.h>
int main() {
    int x, y;
    int result = 1;
    printf ("please enter x and y:");
    scanf ("%d %d", &x, &y);
    while (y >= 1)
    {
        result * = x;
        y --;
    }
    printf ("result is %d", result);
    return 0;
}
```

write a c program to find  $n!$ ?

```
#include <stdio.h>
int main () {
    int n;
    int result = 1;
    printf ("please enter the number");
    scanf ("%d", &n);
    while (n >= 1)
    {
        result = result * n;
        n --;
    }
}
```

```
printf ("result is %d", result);
return 0;
```

```
}
```



# do-while

do {

statements;

↓

} while (Logical expression);

الوحدة التي تكرر

**Example** write a c programme to validate an input between (1 → 6) continuously (until input between 1 → 6 is entered) using do-while statement?

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

```
int main() {
```

```
int choice;
```

```
do {
```

```
printf("please enter the channel number");
```

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

```
}
```

```
while (choice < 1 || choice > 6)
```

```
switch (choice) {
```

```
case 1: printf("Aljazeera");
```

```
case 2: break; printf("AlArabia");
```

```
case 3: break; printf("Alb2");
```

```
case 4: break; printf("space toon");
```

```
case 5: break; printf("Toyer Aljazeera");
```

```
case 6: break; printf("Haramessh");
```

```
break;
```

```
}
```

```
return 0;
```

```
}
```

Print all numbers between 1 and 100 that are divisible by 7

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

int main()
{
    int x = 1;
    do
    {
        if ((x % 7) == 0)
            printf("%d\n", x);
        x++;
    }
    while (x <= 100) ;
}
```

بقيمة معينة بين  
النقط



What would be the output of the following code ?

```
#include <stdio.h>

int main()
{
    int i = 10;

    do
    {
        printf("Hello %d\n", i );
        i = i -1;
    }
    while ( i > 0 );
return 0;
}
```

Output

```
Hello 10
Hello 9
Hello 8
Hello 7
Hello 6
Hello 5
Hello 4
Hello 3
Hello 2
Hello 1
```

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

```
int main() {
```

```
    int i, j, k;
```

```
    for (i=1 ; i <= 4 ; i++) {
```

```
        for (k=1 ; k <= 4-i ; k++)
```

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

```
            for (j=1 ; j <= 2*i-1 ; j++)
```

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

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

```
    }
```

```
    return 0;
```

```
}
```

```
    *  
  * * *  
 * * * * *
```

```
* * * * *  
* * * * *  
* * * * *
```

output →



```
#include <stdio.h>

int main() {
    char x;
    for ( x = 'A' ; x <= 'Z' ; x++) {
        printf ( "%4c" , x);
        if ( x % 4 == 0)
            printf ( "\n");
    }
    return 0;
}
```

output ⇒

A	B	C	D
E	F	G	H
I	J	K	L



Y Z

write a c program to check it is prime or not?

```
#include <stdio.h>
int check_prime (int a);
```

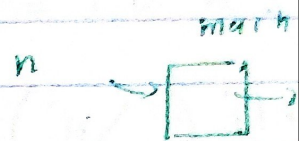


```
int main () {
```

```
int n, result;
```

```
printf ("enter an integer to check it \n");
```

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



```
result = check_prime(n);
```

```
if (result == 1)
```

```
printf ("%d is prime.\n", n);
```

```
else
```

```
printf ("%d is not prime", n);
```

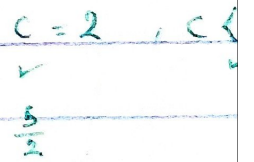
```
return 0;
```

```
}
```

```
int check_prime (int a) {
```

```
int c;
```

```
for (c = 2; c <= a - 1; c++) {
```



```
if (a % c == 0)
```

```
return 0;
```

```
}
```

```
if (c == a)
```

```
return 1;
```

```
}
```



write a c program to print all the prime numbers between 2 - 10000?

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

```
int is-prime (int x);
```

```
int main () {
```

```
int i;
```

```
for (i = 2 ; i <= 10000; i++)
```

```
if (is-prime (i) == 1)
```

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

```
return 0;
```

```
}
```

```
int is-prim (int x) {
```

```
int j;
```

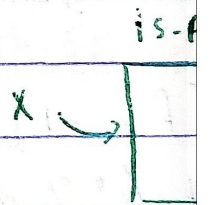
```
for (j = 2; j < x; j++)
```

```
if (x % j == 0)
```

```
return 0;
```

```
return 1;
```

```
}
```



c دیکھو  
بناؤ  
Function

⇒ #include <stdio.h>

```
int main( ) {
```

```
int i, f, j;
```

```
for ( i = 2; i <= 10000; i++ ) {
```

```
    f = 1;
```

```
    for ( j = 2; j <= i; j++ )
```

```
        if ( i % j == 0 ) {
```

```
            f = 0;
```

```
        }
```

```
        break;
```

```
    if ( f == 1 )
```

```
        print ( "%d\n", i );
```

```
    }
```

```
return 0;
```

```
}
```

in  
print

for

{



write a c program to print the first 50 prime numbers :-

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

```
int main() {
```

n=2

```
int counter = 0;
```

```
int num = 1;
```

```
int i;
```

```
printf ("The first 50 prime numbers\n");
```

```
while (counter < 50) {
```

```
num ++;
```

```
for (i = 2; i <= num - 1; i) {
```

```
if (num % i == 0) break;
```

```
i ++;
```

```
}
```

```
if (i >= num - 1) {
```

```
printf ("%d", num);
```

```
counter ++;
```

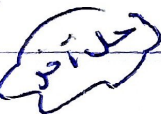
```
}
```

```
}
```

```
return 0;
```

print all the number between (1 → 100) that are divisible by 7?

```
#include <stdio.h>
int main()
{
    int i;
    for (i=1; i<=100; i++)
        if (i%7 == 0)
            printf("%d\n", i);
    return 0;
}
```



```
#include <stdio.h>
int main()
{
    int x=1;
    do
    {
        if ((x%7) == 0)
            printf("%d\n", x);
        x++;
    }
    while (x <= 100);
}
```

```
while (x <= 100);
```

```
}
```



write a c programme to find out sum of digit of given number?

```
#include <stdio.h>
int main()
{
    int num;
    int sum = 0;
    printf ("please enter the number");
    scanf ("%d", &num);
    while (num > 0)
    {
        sum + = num % 10;
        num = num / 10;
    }
    printf ("The sum is %d", sum);
    return 0;
}
```

write a c program for reverse an Integer:-

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

```
int main()
```

```
{
```

```
int n, reverse=0, rem;
```

```
printf("enter an integer ");
```

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

251

```
while (n != 0) {
```

```
rem = n % 10;
```

```
reverse = reverse * 10 + rem;
```

```
n /= 10;
```

```
}
```

```
printf("reversed num = %d", reverse);
```

```
return 0;
```

```
}
```