

# Control Statements in C

## C-21 $\Rightarrow$ If statements in C

### Control Statements:

Statements used to control something.

#### Example:

```
void main()
```

```
{
```

```
int a, b, sum;
```

```
printf("Enter a & b:");
```

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

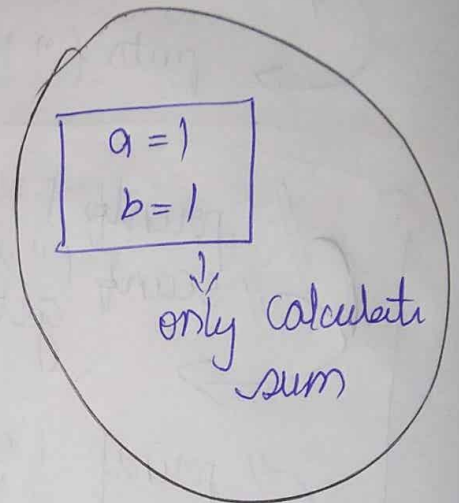
```
sum = a + b;
```

```
printf("sum = %d", sum);
```

```
printf("Don't want to calculate sum");
```

```
getch();
```

```
}
```



Control flow of  
Statements.

\* Control the flow of statements

\* Always used to control the flow  
of statements execution process.

\* Types of Control Statements.

# Control statements: (or) Decision making statements

- \* if (single selection statement)
- \* if else
- \* if else-if ladder.
- \* nested if
- \* switch

if statement:

if (Condition)

statement;

after if } statements;

```
void main()
```

```
{
```

```
    int a;
```

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

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

```
    if (a)  $\begin{matrix} \rightarrow \text{True} \\ \rightarrow \text{False} \end{matrix}$ 
```

```
        printf("Inside if block");
```

```
    printf("out of if block");
```

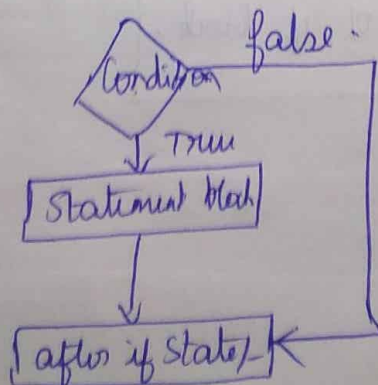
```
    getch();
```

```
}
```

Enter a: 5  
Inside if block  
out of if block

O/P

Flow chart



Enter a: 0  
out of if block

## if with multiple statements:

```
void main()
```

```
{
```

```
    int a;
```

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

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

```
    if (a)
```

```
    {
```

State 1 →

```
        printf("Inside if block");
```

State 2 →

```
        printf("Value of a = %d", a);
```

```
    }
```

for multiple statements inside if block put curly braces

```
    printf("out of if block");
```

```
    getch();
```

```
}
```

o/p 1

```
Enter a: 0
out of if block
```

o/p 2

```
Enter a: 5
Inside if block
Value of a = 5
out of if block.
```



if with semicolon:

```
void main()
```

```
{
```

```
    int a;
```

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

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

```
    if(a);
```

→ Terminating if statement (no meaning to check condition)

```
    {
```

```
        printf("Inside if block");
```

```
        printf("value of a = %d", a);
```

```
    }
```

```
    printf("out of if block");
```

```
    getch();
```

```
}
```

O/p ①

Enter a: 0  
Inside if block  
Value of a = 0  
out of if block.

O/p ②

Enter a: 5  
Inside if block  
value of a = 5  
out of if block.

## Example program:-

```
void main()
```

```
{
```

```
    int age;
```

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

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

```
    if (age > 20)
```

```
    {
```

```
        printf("Your age is: %d", age);
```

```
        printf("You can go Coffe with me");
```

```
    }
```

```
    printf("Its time to go home");
```

```
    getch();
```

```
}
```

o/p 1

```
Enter age: 21  
Your age is: 21  
You can go Coffe with me.  
Its time to go home
```

o/p 2 (without curly braces)

```
Enter age: 19  
You can go Coffe  
with me  
Its time to go home.
```

o/p 3:-

```
Enter age: 15  
Its time to go home.
```

## To check Equality Condition

① if (age == 25) → Equality Condition

```

{
    printf("Your age is: %d", age);
    printf("You can go Coffee with me");
}
printf("Its time to go home");
getch();
}
    
```

o/p

```

Enter age: 20
Its time to go home
    
```

20 == 25  
False

② void main()

```

{
    int age;
    printf("Enter age:");
    scanf("%d", &age);
    if (age = 25) → assignment condition.
    
```

⇒

age  
20 25  
↑  
if (age = 25)  
True

age  
10 25  
if (age = 25)

```

{
    printf("Your age is: %d", age);
    printf("You can go Coffee with me");
}
printf("Its time to go home");
getch();
}
    
```

o/p 1

```

Enter age: 20
Your age is 25
You can go Coffee with me
Its time to go home
    
```

o/p 2

```

Enter age: 0
Your age is 25
You can go Coffee with me
Its time to go home
    
```

o/p 3

```

if (age = 0)
Enter age: 20
Its time to go home.
    
```



③

```
void main()
```

```
{
```

```
    int age;
```

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

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

```
    if(!age)
```

```
    {
```

```
        printf("Your age is : %d", age);
```

```
        printf("You can go coffee with me");
```

```
    }
```

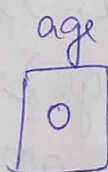
```
    printf("Its time to go home");
```

```
    getch();
```

```
}
```

O/P

```
Enter age: 0
Your age is: 0
You can go coffee
with me
Its time to go home
```

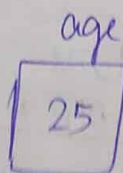


if(!0) → true (not 0)  
↓  
1 → ~~true~~

I/P

```
Enter age: 25
```

```
Its time to go home
```



if(!25) → (not 1)  
↓  
0 → false

④ void main()

{

int age;

printf("Enter age:");

scanf("%d", &age);

if (age > 20 || age < 30)

printf("Your age is: %d", age);

printf("You can go coffee with me");

if (age > 15)

printf("Your age is %d", age);

printf("Its time to go home");

getch();

}

O/p 1

Enter age: 28  
Your age is 28  
You can go coffee with me  
  
Your age is 28  
Its time to go home.

O/p 2

Enter age: 16  
Your age is 16  
Its time to go home


O/p 3

Enter age: 14  
-----  
process terminated



## CODE 1:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 1 if statement */
4  //if with single statement
5  int main()
6  {
7      int a;
8      printf("\nEnter a:");
9      scanf("%d",&a);
10     if(a)
11         printf("Inside if block\n");
12     printf("Outside if block\n");
13     getch();
14 }
15
16
17
```

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```
Enter a:0
Outside if block

Process returned 0 (0x0)   execution time : 4.534 s
Press any key to continue.
```

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```
Enter a:5
Inside if block
Outside if block
```

## CODE 2:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 2 if statement */
4  //if with multiple statement
5  int main()
6  {
7      int a;
8      printf("\nEnter a:");
9      scanf("%d",&a);
10     if(a)
11     {
12         printf("Inside if block\n");
13         printf("Value of a:%d\n",a);
14     }
15
16     printf("Outside if block\n");
17     getch();
18 }
19
```

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```
Enter a:5
Inside if block
Value of a:5
Outside if block
```

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```
Enter a:0
Outside if block
```

## CODE 3:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 3 if statement */
4  //if with semicolon terminates if condition either true or false
5  int main()
6  {
7      int a;
8      printf("\nEnter a:");
9      scanf("%d",&a);
10     if(a);
11     {
12         printf("Inside if block\n");
13         printf("Value of a:%d\n",a);
14     }
15
16     printf("Outside if block\n");
17     getch();
18 }
19
20
```

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```
Enter a:0
Inside if block
Value of a:0
Outside if block
```

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```
Enter a:5
Inside if block
Value of a:5
Outside if block
```



## CODE 4:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 4 if statement */
4  //if with curly braces
5  int main()
6  {
7      int age;
8      printf("\nEnter age:");
9      scanf("%d", &age);
10     if(age>20)
11     {
12         printf("Your age is:%d\n", age);
13         printf("You can have coffee with me...\n");
14     }
15
16     printf("Its time to go home...\n");
17     getch();
18 }
19
20
```

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```
Enter age:18
Its time to go home...
```

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```
Enter age:21
Your age is:21
You can have coffee with me...
Its time to go home...
```

## CODE 5:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 5 if statement */
4  //if without curly braces
5  int main()
6  {
7      int age;
8      printf("\nEnter age:");
9      scanf("%d",&age);
10     if(age>20)
11
12         printf("Your age is:%d\n",age);
13         printf("You can have coffee with me...\n");
14     |
15
16     printf("Its time to go home...\n");
17     getch();
18 }
19
```

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```
Enter age:19
You can have coffee with me...
Its time to go home...
```

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```
Enter age:21
Your age is:21
You can have coffee with me...
Its time to go home...
```

## CODE 6:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 6 if statement */
4  //if with equality condition
5  int main()
6  {
7      int age;
8      printf("\nEnter age:");
9      scanf("%d",&age);
10     if(age==25)
11     {
12         printf("Your age is:%d\n",age);
13         printf("You can have coffee with me...\n");
14     }
15     printf("Its time to go home...\n");
16     getch();
17 }
18
```

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```
Enter age:25
Your age is:25
You can have coffee with me...
Its time to go home...
_
```

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```
Enter age:20
Its time to go home...
```



## CODE 7:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 7 if statement */
4  //if with assignment condition
5  int main()
6  {
7      int age;
8      printf("\nEnter age:");
9      scanf("%d",&age);
10     if(age=25)
11     {
12         printf("Your age is:%d\n",age);
13         printf("You can have coffee with me...\n");
14     }
15     printf("Its time to go home...\n");
16     getch();
17 }
18
```

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```
Enter age:21
Your age is:25
You can have coffee with me...
Its time to go home...
_
```

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```
Enter age:0
Your age is:25
You can have coffee with me...
Its time to go home...
_
```

## CODE 8:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 8 if statement */
4  //if with assignment condition
5  int main()
6  {
7      int age;
8      printf("\nEnter age:");
9      scanf("%d", &age);
10     if(age=0) //condition false
11     {
12         printf("Your age is:%d\n", age);
13         printf("You can have coffee with me...\n");
14     }
15     printf("Its time to go home...\n");
16     getch();
17 }
18
```

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```
Enter age:20
Its time to go home...
```

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```
Enter age:0
Its time to go home...
```

## CODE 9:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 9 if statement */
4  //if with not condition
5  int main()
6  {
7      int age;
8      printf("\nEnter age:");
9      scanf("%d",&age);
10     if(!age) //not condition, not 1 means result will be 0 that is false
11     {
12         printf("Your age is:%d\n",age);
13         printf("You can have coffee with me...\n");
14     }
15     printf("Its time to go home...\n");
16     getch();
17 }
18
```

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```
Enter age:0
Your age is:0
You can have coffee with me...
Its time to go home...
```

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```
Enter age:20
Its time to go home...

```



## CODE 10:

```
1  #include <stdio.h>
2  #include <stdlib.h>
3  /* 10 if statement */
4  int main()
5  {
6      int age;
7      printf("\nEnter age:");
8      scanf("%d",&age);
9      if(age>20 && age<30)
10     {
11         printf("Your age is:%d\n",age);
12         printf("You can have coffee with me...\n");
13     }
14     if(age>15)
15     {
16         printf("Your age is:%d\n",age);
17         printf("Its time to go home...\n");
18     }
19     getch();
20 }
21
```

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```
Enter age:28
Your age is:28
You can have coffee with me...
Your age is:28
Its time to go home...
```

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```
Enter age:16
Your age is:16
Its time to go home...
```

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```
Enter age:14
Process returned 0 (0x0)   execution time : 4.434 s
Press any key to continue.
```