

* for loop *

Q what is for loop?

Ans $\Rightarrow$ for loop is used to iterate (repeat) a set of instruction(s), generally, for a fixed no. of times. It is generally used when no. of repetitions can be predicted or are known beforehand.

Syntax : for (initialisation ; condition ; updation)
{

}
→ loop variable

}

loop variable

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

{ println ("Hello world");

}

Eg:

Q What is false or delay or empty loop?

Ans $\Rightarrow$ A loop that does not contain any statement but just repeats doing nothing (i.e. wastes time) is known as false loop or empty loop or delay loop.

Eg :- `for (int i = 1; i <= 10; i++)`
`{`

`}`

Q What is infinite loop?

Ans → A loop that does not terminate i.e. keeps on repeating without stopping is known as infinite loop.

Eg: `for (i = 1; ; i = i + 1)`
`{`
`printf("%d", i);`
`}`

OR

`for ( ; ; )` ✓
`{`
`Statements;`
`}`

OR

`for (i = 1; i <= 20; )`
`{`
`Statement(s);`
`}`

OR

`for (int i = 1; i > 0; i++)`
`{`
`Statement(s);`
`}`

Q what is compound loop?

Ans $\Rightarrow$ Compound for loop is a combination of more than one for loops into a single loop in such a way that all of them start and terminate together.

Eg: $\text{for}(i=1, j=10; (i \leq 5); i=i+1, j=j-1)$
{
 $\text{Sopln}(i + " " + j);$
}

Output $\rightarrow$

1	10
2	9
3	8
4	7
5	6

Q for (int i=10, j=20; i <=20 && j >=10; i++, j--)

{

 sophn (i + j);

}

* Output :-

30 |

30 |

30

30

30

30

30

30

30

30

30

* Nested loop

A loop within another loop is known as nested loop. It can be formed using for, while or do-while.

Eg.

```
for (K=1 ; K<=5 ; K++)  
{  
    for (p=1 ; p<=10 ; p++)  
    {  
        Sopln (p);  
    }  
}
```

Q How many times the loop will execute ?

Ans Outer loop will run 5 times.

For each iteration of outer loop, inner loop will execute 10 times.

Therefore, total no. of times loop will execute is $10 \times 5 = 50$.

Jump Statements

A jump statement breaks the normal flow of program, and move the control to a different part of the program to execute statements.

Eg: break, continue, return.

break

* break is used to exit a loop or switch block.

* It terminates a loop.

eg:

```
for(int i=1; i<=100; i=i+1)
{
    statement;
    if (condition)
        break;
    Statement(s);
}
```

continue

* continue is used to move into the next round of iteration of loop & moves into the next round.

It does not terminate the loop.

eg:

```
-or (int i=1; i<=10; i++)
{
    sopln(i);
    if(i==5 || i==6)
        continue;
    sopln(i*2);
}
```

Output :-

1
2
2
4
3
6
4
8
5
6
7
14
8
16
9
18
10
20

Q1. WAP to print all no.s from 1 to 20,

HW

Q2. WAP to print the table of N (upto Z times).

HW

Q3. WAP to print the following series:

(i) 0, 3, 8, 15, ..., 99.

(ii) 1, 7, 13, 19, 25, ..., 55.

Q4 WAP to enter 1000 no.s & print the biggest and the second biggest no. (Assume that biggest or smallest no. do not repeat in the entered data).

Q5. WAP to print the following patterns.

H/W. (i)

```
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

(ii)

```
0 3
0 0 3
0 0 0 3
0 0 0 0 3
0 0 0 0 0 3
```

(iii)

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