Structured Programming Language

Lecture - 5

For loop in C

o   The **for loop in C language** is also *used to iterate the state ment or a part of the program several times*, like while and do-while loop.

o   But, we can initialize and increment or decrement the varia ble also at the time of checking the condition in for loop.

o   Unlike do while loop, the condition or expression in for loo p is given before the statement, so it may execute the statement 0 or more times.

For loop in C

When use for loop in C

• For loop is better if number of iteration is known by the programmer.

Syntax of for loop in C

• The syntax of for loop in c language is given below:

```
for(initialization;condition;incr/decr){
//code to be executed
}
```
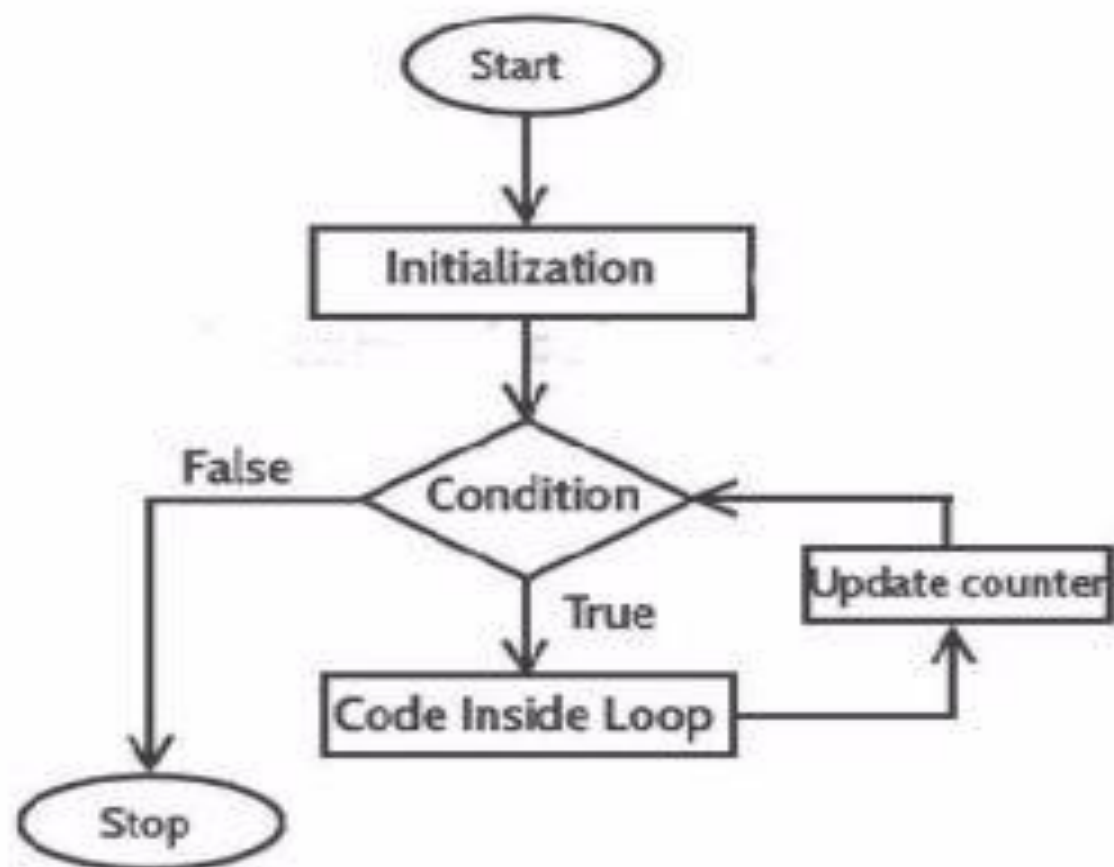
For loop in C

How for loop works

- Initialization
- Condition checking
- Incremented of decremented, and condition checking

```
for(initialization;condition;incr/decr){

//code to be executed

}
```

For loop in C

Flow Chart

Print table for the given number using C for loop

Code

```c
#include<stdio.h>
int main(){
int i=1,number=0;
printf("Enter a number: ");
scanf("%d",&number);
for(i=1;i<=10;i++){
printf("%d \n",(number*i));
}
return 0;
}
```

Output

```
Enter a number: 2
2
4
6
8
10
12
14
16
18
20
```

Infinitive for loop in C

- If you don't initialize any variable, check condition and increment or decrement variable in for loop, it is known as infinitive for loop.

- In other words, if you place 2 semicolons in for loop, it is known as infinitive for loop.

```
for(;;){
printf("infinitive for loop example by javatpoint");
}
```

Nested for loop

- A for loop inside another for loop is called nested for loop.

- The inner loop runs as many times as there is the limit of the condition of the external loop.

- Outer loop represent rows and inner loop will represent column.

- This loop runs as long as the condition in the parenthesis is true.

- ANSI C allows up to 15 levels of nesting.
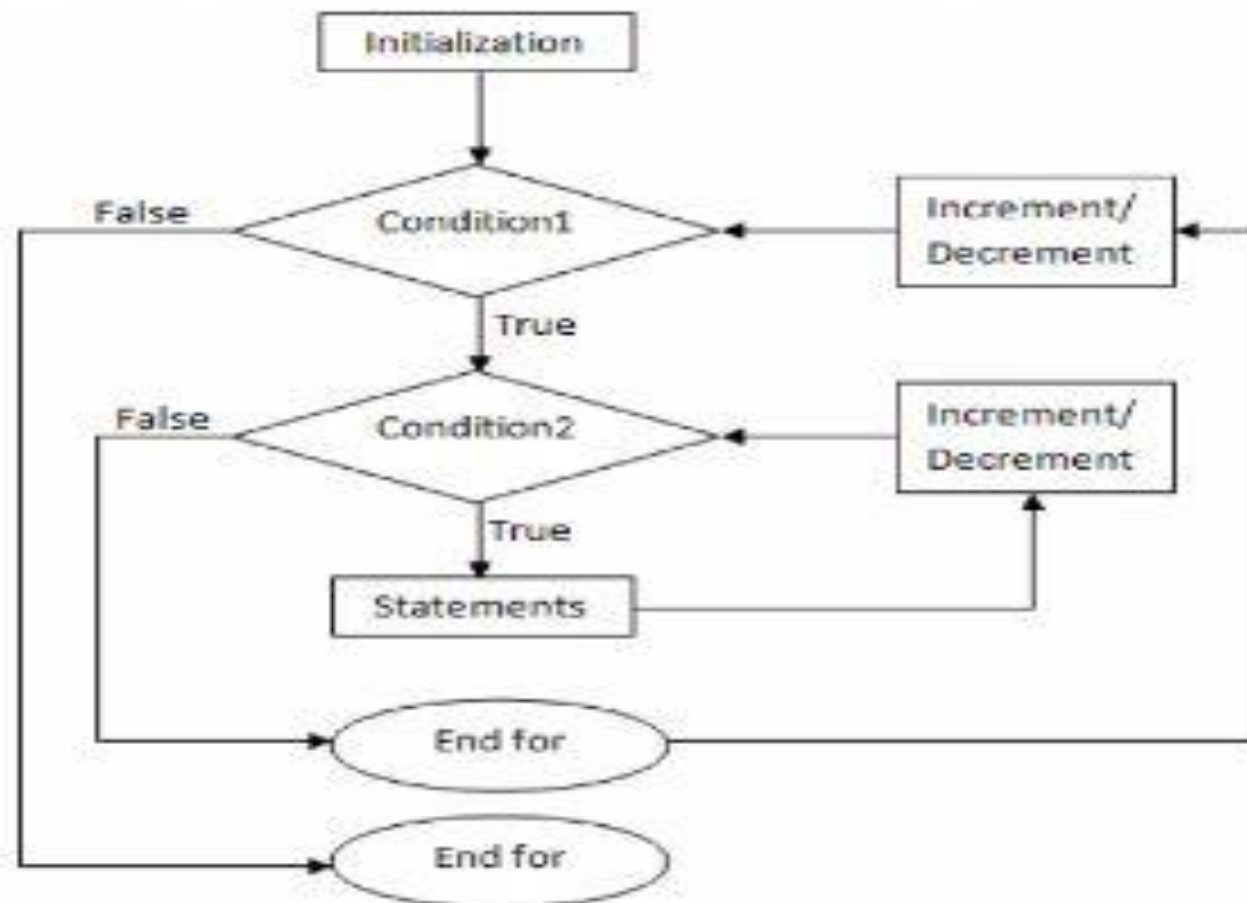
Nested for loop

Syntax

```
for (initialization; condition; increment/decrement)
{
   for (initialization;  condition;  updation)
   {
      body of the loop;
   }
}
```

Nested for loop

Flow Chart

Nested for loop

Example 1

```c
#include <stdio.h>
int main()
{
    int i, j, rows;

    printf("Enter number of rows: ");
    scanf("%d",&rows);

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

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

Nested for loop

Example 2

```c
#include <stdio.h>
int main()
{
    int i, j, rows;

    printf("Enter number of rows: ");
    scanf("%d",&rows);

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

    return 0;
}
```

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