Loop control statements

Loop control statements in C are used to perform looping operations until the given condition is true. Control comes out of the loop statements once condition becomes false.

Types of loop control statements in C:

There are 3 types of loop control statements in C language. They are,

1. for
2. while
3. do-while

- Syntax for each C loop control statements are given in below table with description.

S.no	Loop Name	Syntax	Description
1	for	for (exp1; exp2; expr3) { statements; }	Where, exp1 – variable initialization (Example: i=0, j=2, k=3) exp2 – condition checking (Example: i>5, j<3, k=3) exp3 – increment/decrement (Example: ++i, j–, ++k)
2	while	while (condition) { statements; }	where, condition might be a>5, i<10
3	do while	do { statements; } while (condition);	where, condition might be a>5, i<10

Example program (for loop) in C:

In for loop control statement, loop is executed until condition becomes false.

```c
#include <stdio.h>

int main()
{
  int i;

  for(i=0;i<10;i++)
  {
     printf("%d ",i);
  }

}
```

Output:

0 1 2 3 4 5 6 7 8 9

Example program (while loop) in C:

In while loop control statement, loop is executed until condition becomes false.

```c
#include <stdio.h>

int main()
{
  int i=3;

  while(i<10)
   {
 printf("%d\n",i);
 i++;
   }

}
```

Output:

```
3 4 5 6 7 8 9
```

Example program (do while loop) in C:

In do..while loop control statement, while loop is executed irrespective of the condition for first time. Then 2nd time onwards, loop is executed until condition becomes false.

```c
#include <stdio.h>

int main()
{
  int i=1;

  do
   {
    printf("Value of i is %d\n",i);
   i++;
   }while(i<=4 && i>=2);

}
```

Output:

```
Value of i is 1
Value of i is 2
Value of i is 3
Value of i is 4
```

Difference between while & do while loops in C:

S.no	while	do while
1	Loop is executed only when condition is true.	Loop is executed for first time irrespective of the condition. After executing while loop for first time, then condition is checked.