LOOPS IN C

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OBJECTIVES

Course Objective

- Understand the basic terminology used in computer programming
- It stresses the strengths of C, which provide students with the means of writing efficient, maintainable, and portable code.
- write, compile and debug programs in C language.
- Increase the ability to learn new programming languages

Topic Objective

❖ Understand the basics of looping.

❖ To use the while, do-while and for repetition statement to execute statements in a program repeatedly.

INTRODUCTION

❖ Statements in a program are executed one after the other

ex: statement 1;

statement 2;

:

statement n;

❖ Sometimes, the user want to execute a set of statements repeatedly.

❖ Loop statements are used to repeat the execution of statement or blocks.

❖Iteration of a loop: the number of times the body of loop is executed.

❖ Two types of loop structure are:

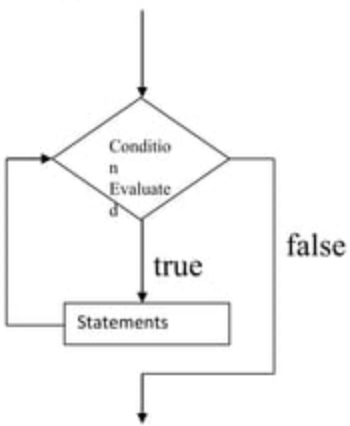
Pretest : Entry - controlled loop

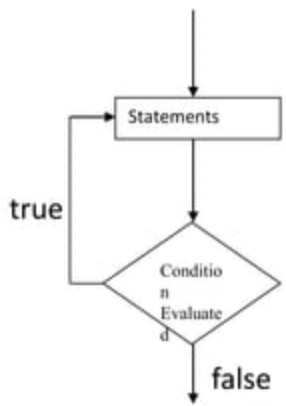
Posttest : Exit – controlled loop

Pretest Vs. Posttest

Pretest : Condition is tested before each iteration to check if loops should occur.

Posttest : Condition is tested after each iteration to check if loop should continue (at least a single iteration occurs).





TYPES OF LOOP

- while loop
- do-while loop
- for loop

while Loop

❖ It has a loop condition only that is tested before each iteration to decide whether to continue or terminate the loop.

❖ The body of a while loop will execute zero or more times

Syntax:

```
while (<condition>){
    <statement/block>;
    }
```

Example :

```
int i=0;
while(i<3){
    printf("Hello\n");
    i++;
    }
```

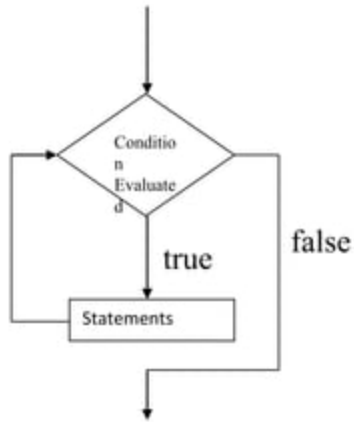
Output:

Hello

Hello

Hello

Flow diagram



do…while Loop

❖ Do while has a loop condition only that is tested after each iteration to decide whether to continue with next iteration or terminate the loop.

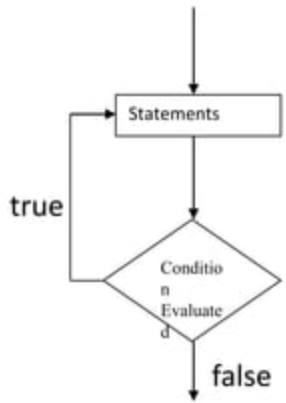
Syntax:

```
do{
  <statement/block>;
    }while(condition);
```

Example:

```
int i=0;
do{
      Printf ("Hello\n");
         i++;
    } while (i<3);
```

Flow diagram



Output:

```
Hello
Hello
Hello
```

for Loop

for loop has three parts:

❖ Initializer is executed at start of loop.

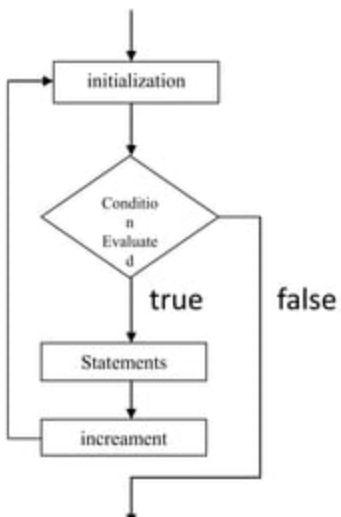
❖ Loop condition is tested before iteration to decide whether to continue or terminate the loop.

❖ Increment is executed at the end of each loop iteration.

Syntax:

```
for( [initialize]; [condition]; [incrementor] )
 {
      <statement/block>;
 }
```

Flow diagram



Example:

```
for(i=0; i<3; i++)
{
        printf("Hello\n");
}
```

Output:

```
Hello
Hello
Hello
```

ASSESSMENT METRIC

- What is looping? List the types of looping.
- Explain the while loop with an example.
- Give the difference between while and do-while loops
- Explain the syntax of for loop with an example
- List out the difference between while and for loop. And also explain the do-while loop.

CONCLUSION

❖ Importance of loops in any programming language is immense, they allow us to reduce the number of lines in a code, making our code more readable and efficient.

REFERENCES

[1]. E. Balaguruswamy, "**Programming in ANSI C",** Third edition, Tata McGraw Hill Publications, 2002.

[2]. P. B. Kotur, **"Computer Concepts and C programming",** Kindle Edition, Sapna Book House, Bangalore, 2009.

Thank You