Computer Fundamentals

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Lecture 23

Loop

- ➢ Loop causes a section of program to be repeated
  - ❑ Repetition for a certain number of times
- ➢ Repetition continues when a condition is true
  - ❑ When condition becomes false, loop ends
  - ❑ Control passes to statements following loop
- ➢ Three kinds of loops
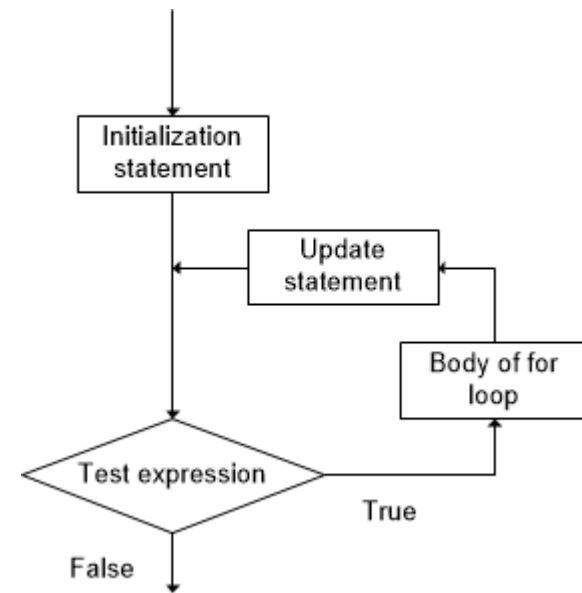 - ❑ for loop
  - ❑ while loop
  - ❑ do-while loop

Source: R. Lafore, *Object-Oriented Programming in C++*, Fourth Edition, 2002

for Loop

➢ A specialized construct
- ❑ Iteration for a specific number of times

➢ Often called a "counting" loop
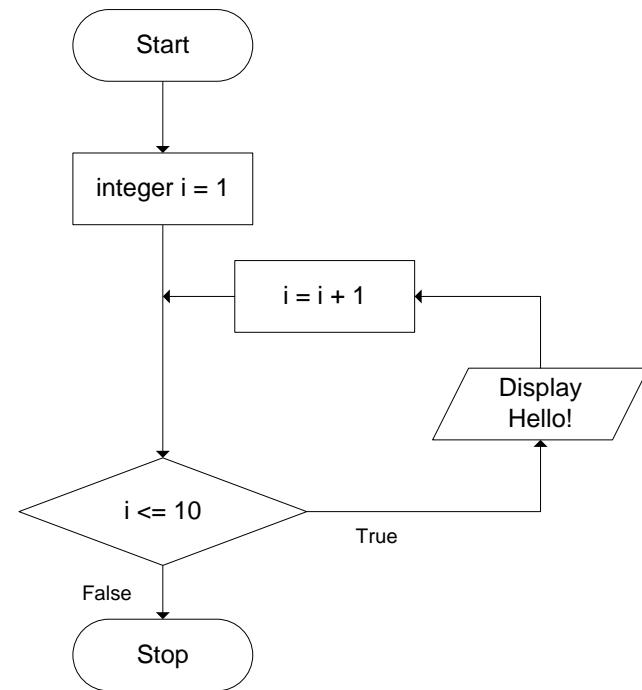
FOR iteration bounds
  sequence
END FOR

Source: *http://www.programiz.com/cpp-programming/for-loop*

for Loop (cont.)

> A program to display text message "Hello!" 10 times

```
FOR integer i equals 1 to 10
  DISPLAY Hello!
END FOR
```
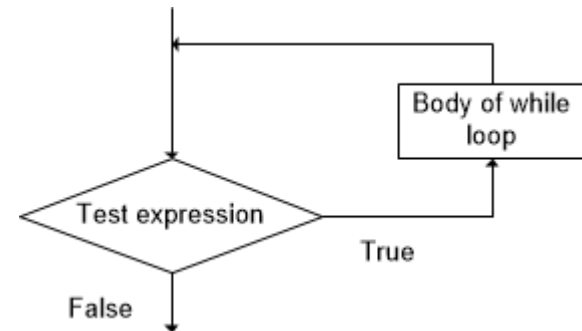
➢ Write pseudocode and draw flowchart for program to find the factorial of an integer entered by the user using `for` loop and display the factorial

while Loop

➢ **Used to specify a loop with a test expression at the top**
  - ❑ If true, code inside the body of "while" loop is executed
  - ❑ Then again test expression checked whether true or not
  - ❑ Process continues until the test expression becomes false

➢ **Used mostly when the number of iterations is unknown**

WHILE condition
  sequence
END WHILE

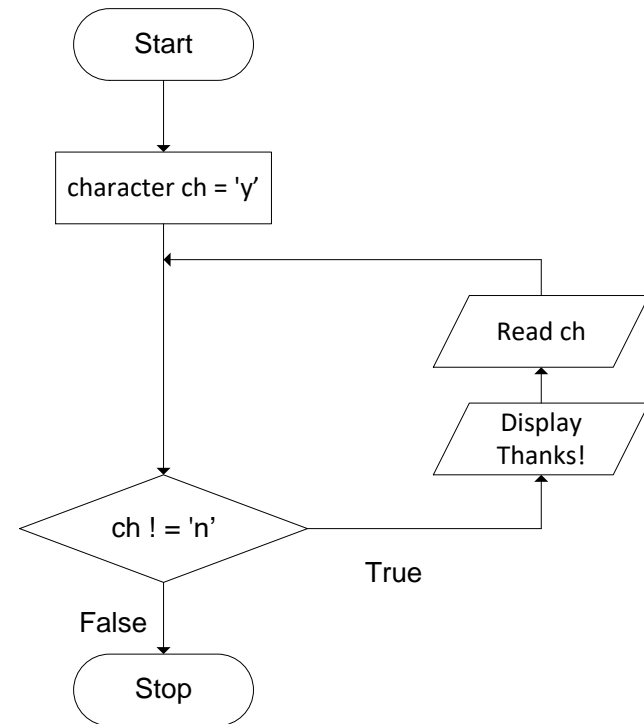**Source**: *http://www.programiz.com/cpp-programming/do-while-loop*

while Loop (cont.)

➢ A program to display text message "Thanks!" and prompt user to enter a character. If 'n' is entered, the process is not repeated, otherwise repeated until 'n' is entered.

SET character ch as 'y'

WHILE ch is not 'n'
  DISPLAY Thanks!
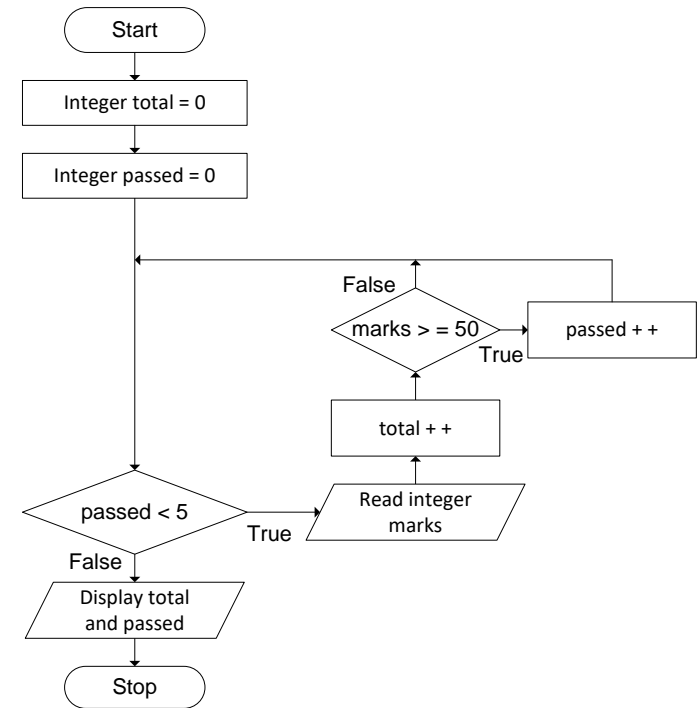 Prompt the user to enter ch
  READ ch
END WHILE

while Loop (cont.)

➤ Write pseudocode and draw flowchart for a program where user is asked to enter an integer "marks" of a student in exam. Passing "marks" are 50. The user is prompted to enter "marks" until marks of five passed students are entered

SET integer passed as 0
SET integer total as 0

WHILE passed is less than 5
   PROMPT user to enter integer marks
   READ marks
   INCREMENT total
   IF marks is greater than or equal to 50
     INCREMENT passed
   END IF
END WHILE

DISPLAY total and passed

➢ Write pseudocode and draw flowchart for program that asks the user to enter a series of integers. When the number entered is 0, the `while` loop terminates