

Programming Fundamentals Lecture 7

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Lecture Objectives

- Learn what is “**Looping**”.
- Learn what is “**While statement**.”

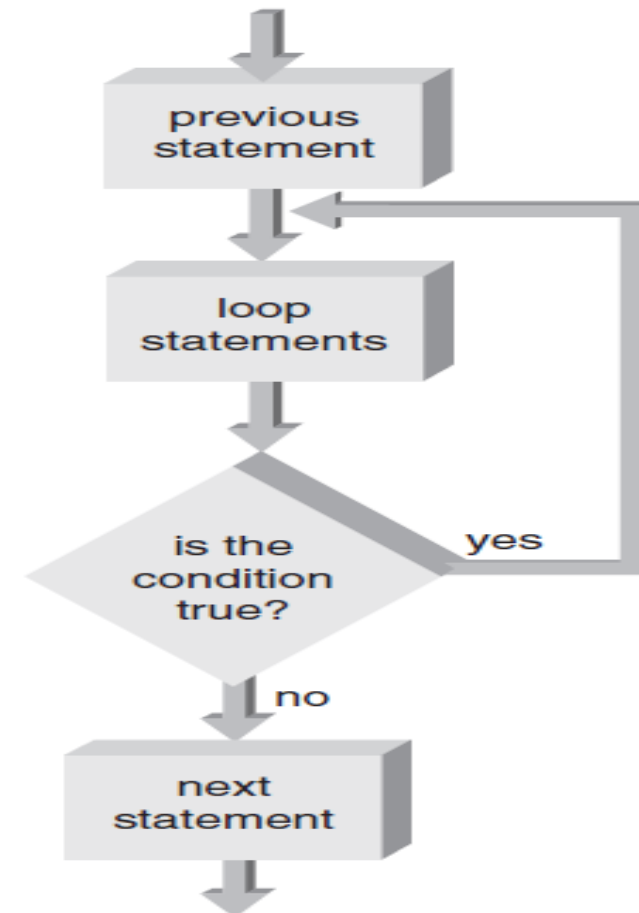
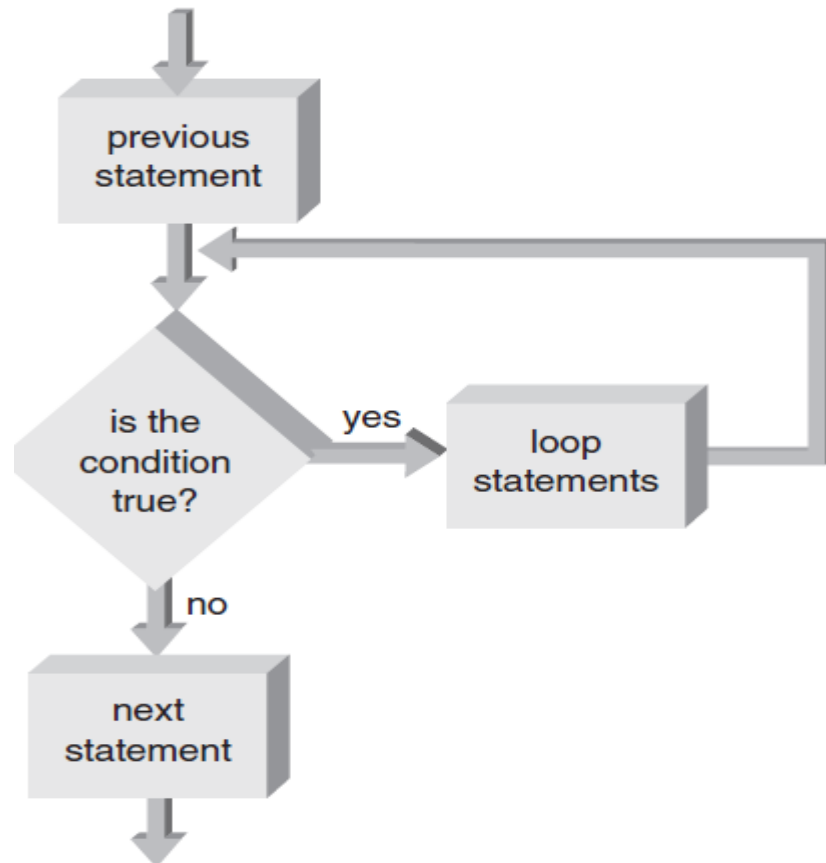
Looping Requirements

- Repetition statement
- condition to be evaluated.
- statement that initially sets the condition.
- statement in the repeating section of code that allows the condition to become false.

Looping Tools

- **while** statement.
- **do....while** statement.
- **for** statement .

Pretest and & Posttest Loops

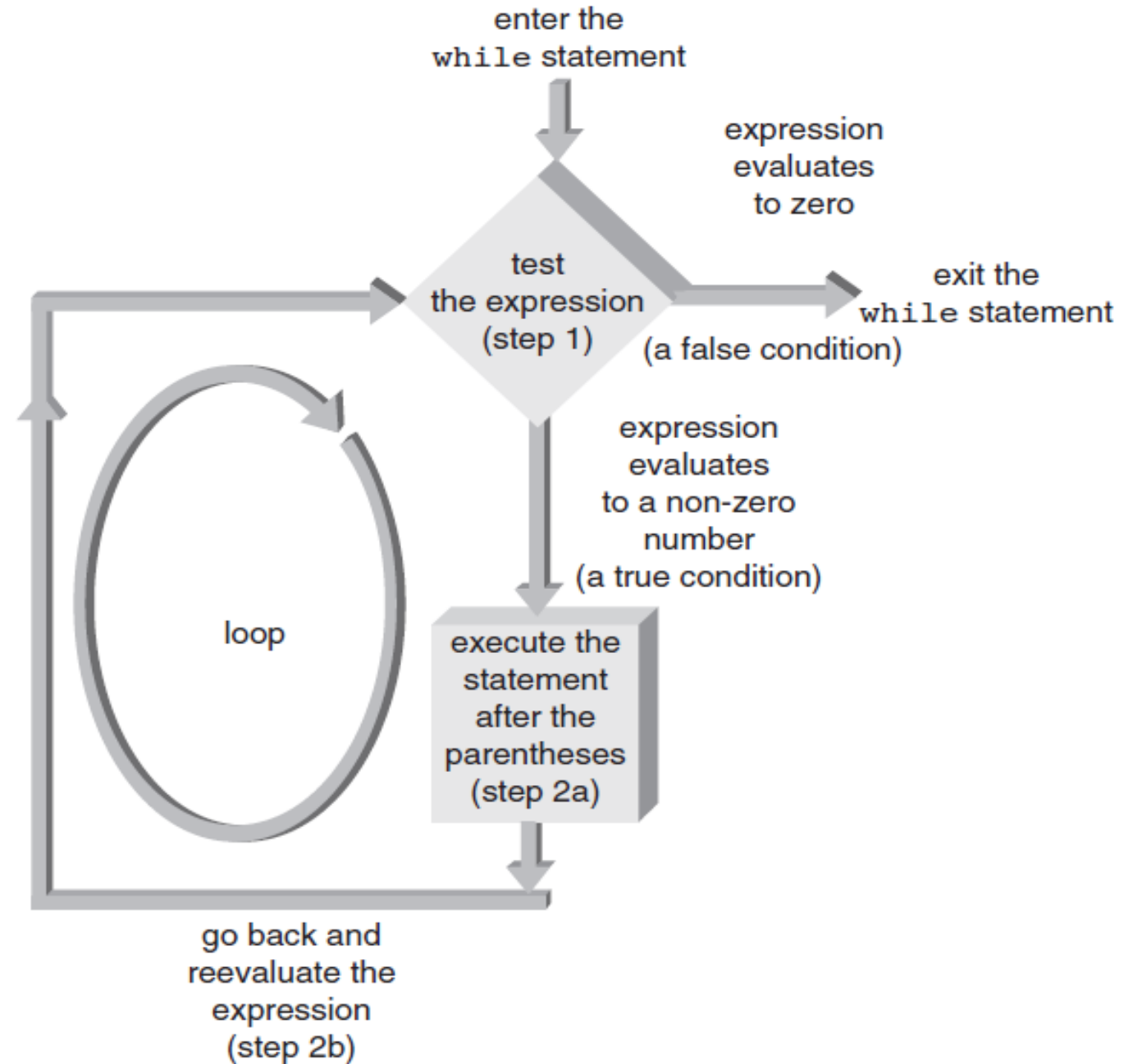


Fixed-Count & Variable-Condition Loops

- In a **fixed-count loop**, the condition is used to keep track of how many repetitions have occurred.
- In a **variable-condition loop**, the tested condition doesn't depend on a count being reached, but on a variable that can change interactively with each pass through the loop.

while Loops

**while (expression)
statement;**



while Loops

1. Test the expression
2. If the expression has a non-zero (true) value
 - a. Execute the statement following the parentheses
 - b. Go back to Step 1
3. Else
4. Exit the while statement and execute the next executable statement following the while statement

Example

```
count = 1; // initialize count
while (count <= 10)
{
    cout << count << " ";
    count++; // increment count
}
```

Example

```
int main()
```

```
{
```

```
int i;
```

```
i = 10;
```

```
while (i >= 1)
```

```
{
```

```
    cout << i << " ";
```

```
    i--; // subtract 1 from i
```

```
}
```

```
return 0;
```

```
}
```

Example

- By using while loop, write C++ program to print the following table:

NUMBER	SQUARE	CUBE
1	1	1
2	4	8
3	9	27
4	16	64
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

Example

Write a C++ program that converts gallons to liters. The program should display gallons from 10 to 20 in 1-gallon increments and the corresponding liter equivalents. Use the relationship that 1 gallon = 3.785 liters.

Example

Write a C++ program that converts feet to meters. The program should display feet from 3 to 30 in 3-foot increments and the corresponding meter equivalents. Use the relationship that 1 meter = 3.28 feet.

Example

By using while loop Write a program to sum up the numbers from 1 to 100 and print the result.

Example

By using while loop write C++ program to find the average of 7 entered numbers.

Example

Write a program to calculate the following series:

$$S = \frac{1}{30} + \frac{2}{29} + \frac{3}{28} + \dots \dots + \frac{30}{1}$$

THANK YOU FOR LISTENING

