For and Do-While Loops

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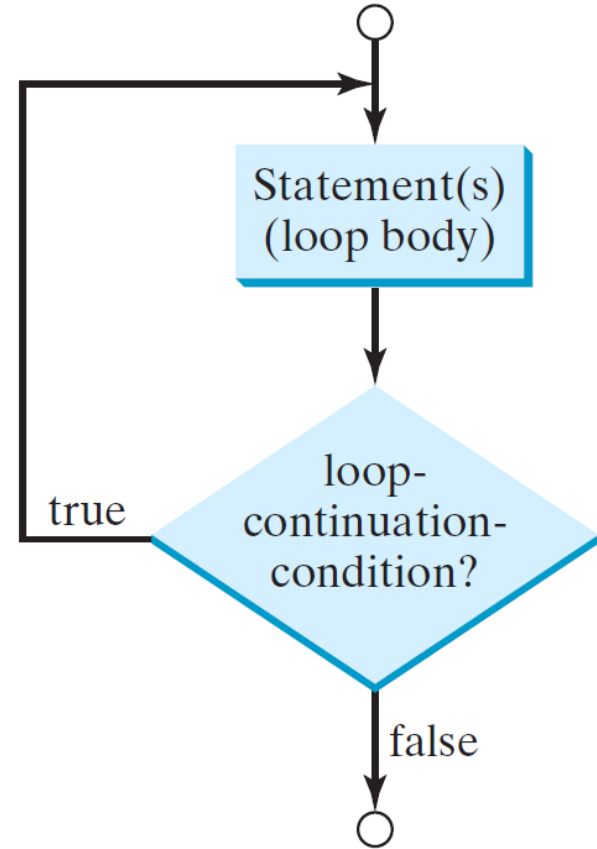
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Objectives

- To write loops using do-while statements (§5.6).

- To write loops using for statements (§5.7).

- To discover the similarities and differences of three types of loop statements (§5.8).

Outline

- Discussed
  - Loops and While loops
  - Design while loops
    - Design strategy, controlling loop (user confirmation, sentinel value)
    - Algorithm. Compute the sum
    - Operating system tricks. Using input/output redirection
  - Nested while loops
- More loop statements
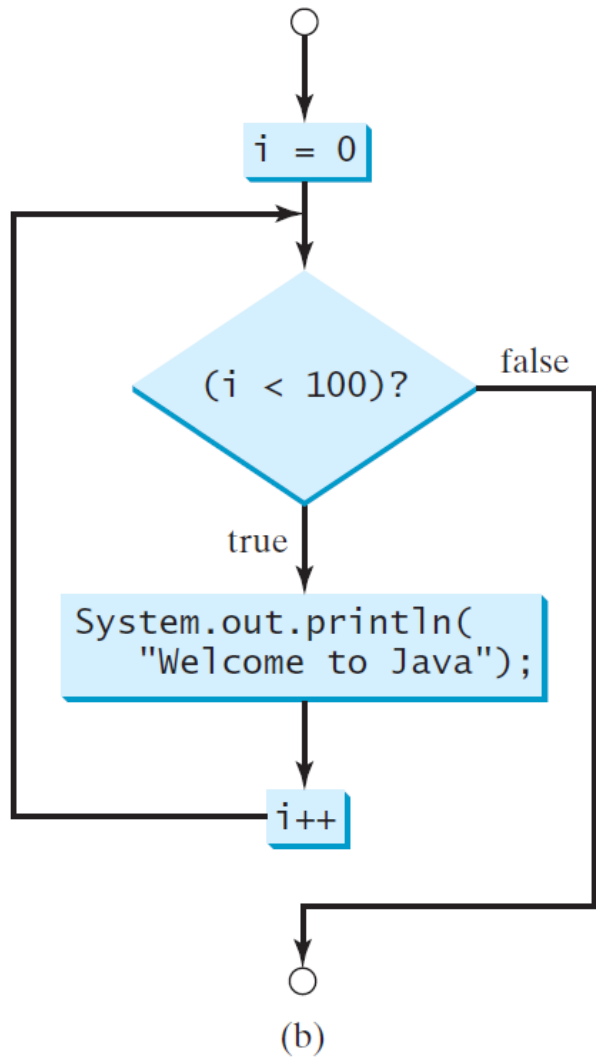 - Do-while Loop
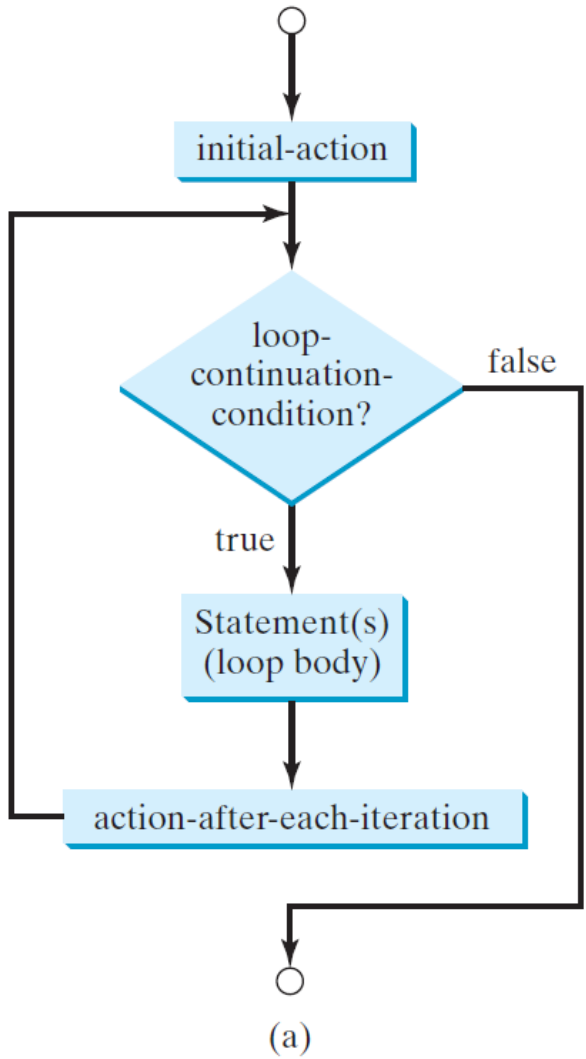 - For Loop

do-while Loop


```
do {

  // Loop body;

  Statement(s);

} while (loop-continuation-condition);
```

for Loop

for (initial-action; loop-continuation-condition; action-after-each-iteration) {

  // loop body;

  Statement(s);

}

```
int i;
for (i = 0; i < 100; i++) {
  System.out.println(
     "Welcome to Java!");
}
```

(a)

(b)

Problem. Compute the Sum of multiple numbers

- Using while loop

- Using do-while loop

- Using for loop

Questions?

More about for Loop

- The <u>initial-action</u> in a <u>for</u> loop can be a list of zero or more comma-separated expressions.

- The <u>action-after-each-iteration</u> in a <u>for</u> loop can be a list of zero or more comma-separated statements.

Correct, but "Strange" for Loops

- Therefore, the following two <u>for</u> loops are correct. They are rarely used in practice, however (why?).

```
for (int i = 1; i < 100; System.out.println(i++));
```

```
for (int i = 0, j = 0; (i + j < 10); i++, j++) {
  // Do something
}
```

Infinite Loop (for vs. while)

- If the <u>loop-continuation-condition</u> in a <u>for</u> loop is omitted, it is implicitly true.

- Thus the statement given below in (a), which is an infinite loop, is correct.

- Nevertheless, it is better to use the equivalent loop in (b) to avoid confusion:

```
for ( ; ; ) {
    // Do something
}
```

Equivalent

```
while (true) {
    // Do something
}
```

(a)

(b)

Questions?