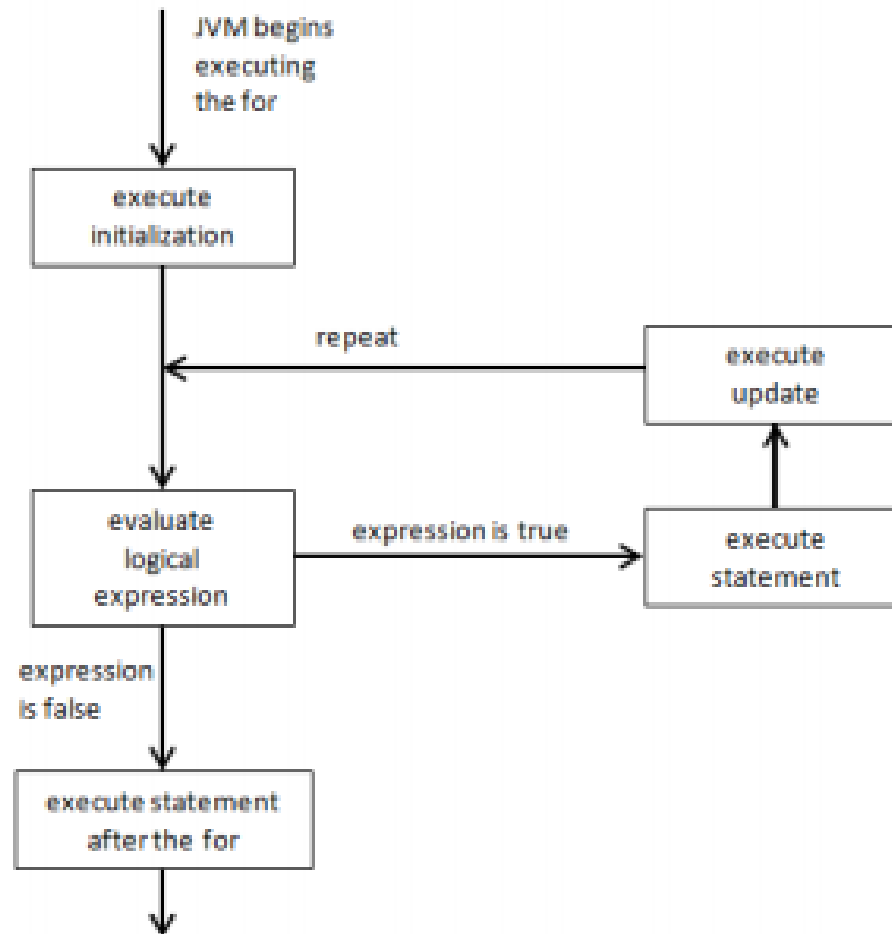# Loops: for

The **for** statement is commonly used where there is a need for a statement to be executed a specific number of times

The syntax of the for statement we consider here is

for (*initialization*; *logical expression*; *increment*)
    statement

Loops: for

Loops: for

Example 1, `Numbers0To9WithFor`, uses a `for` to display integers 0 through 9

A code snippet:

Loop continues as
long as count < 10

```
for (int count=0; count < 10; count++ )

    System.out.println(count);
```

count starts at 0

Increment
Count is increased by 1
each time through the loop

The statement that is executed repeatedly
This statement is indented for clarity and readability

Loops: for

Example 2, `GetIndividualCharacters`, uses `charAt` and a `for`.
Displays characters one-by-one.
A code snippet:

```java
String text = "abc123";
int textLength = text.length();
System.out.println("text string is: "+text);
System.out.println("now, each character one-by-one");
for (int i=0; i<textLength; i++){
    char c = text.charAt(i);
    System.out.println(c);
}
```

Length of the string

length used to control number of times loop executes

Get the ith character

Indented code

Loops: nesting control structures

Example 3, `CountLetters`, uses an `if` and a `for`.
Counts the number of times the letter 'a' appears.
A code snippet:

A line of text

length used to control number
of times loop executes

```java
text = kb.nextLine();
int count = 0;
for (int i=0; i<text.length(); i++){
    if (text.charAt(i) == 'a')
    count++;
}
System.out.println("The line contains "+count
                        +" a\'s");
```

Use an if to test the ith character

Loops: nesting control structures

Example 4, `NestedFor`, uses two `for`s, one nested inside the other
Lines 10 to 13 …. the outer `for`
Lines 11 and 12 … the inner `for`

```
10    for (int i =1; i <=4; i ++) {

11        for (int j =1; j <=4; j ++)

12            System.out.println("\t"+i+"\t"+j+"\t"+(i*j));

13 }
```

How many times
does this execute?

The outer for contains a
compound statement