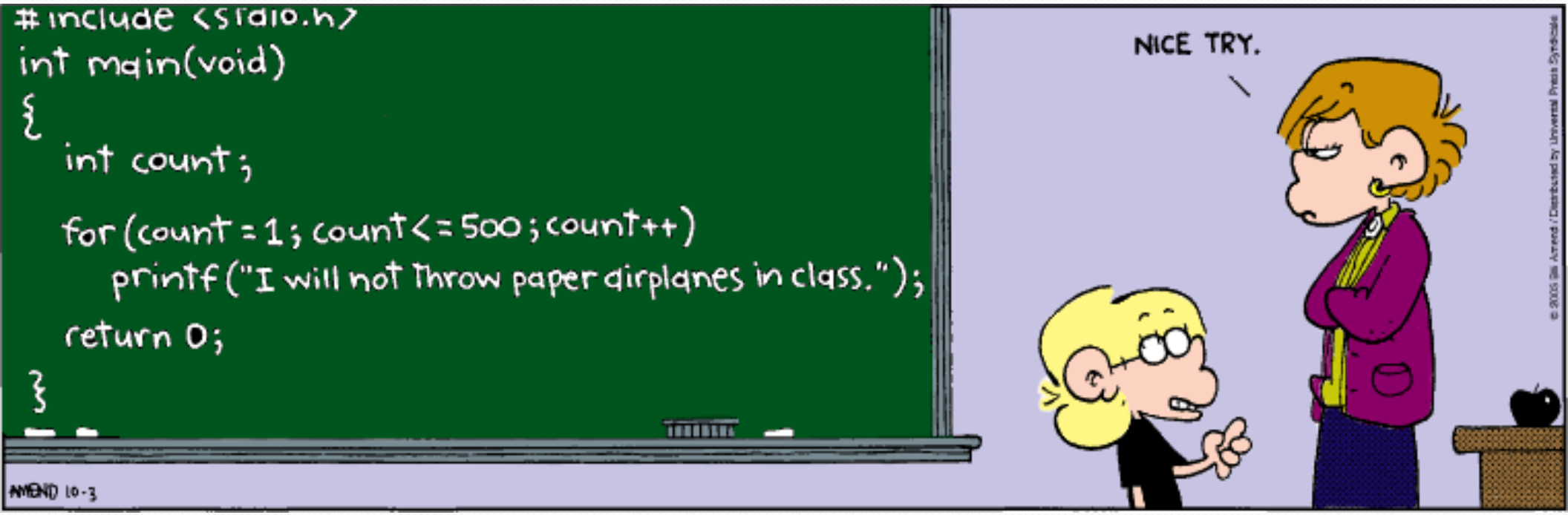
Building Java Programs

Chapter 2

Lecture 2-3: Loop Figures and Constants

reading: 2.4 - 2.5


#include <stdio.h>
int main(void)
{
int count;
for (count = 1; count <= 500; count++)
printf ("I will not throw paper airplanes in class.");
return 0;
}
NICE TRY.
AMEND 10-3

1. Pseudo-code

- **pseudo-code**: An English description of an algorithm.

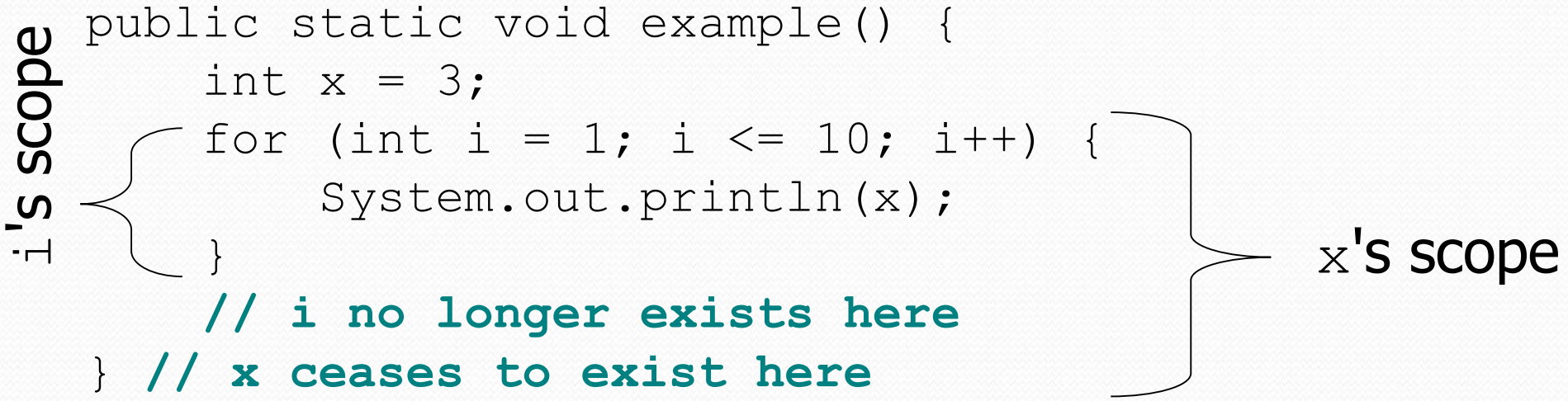
- Example: Drawing a 12 wide by 7 tall box of stars

```
print 12 stars.
for (each of 5 lines) {
    print a star.
    print 10 spaces.
    print a star.
}
print 12 stars.
```

```
************
*          *
*          *
*          *
*          *
*          *
************
```

Scope

- **scope**: The part of a program where a variable exists.
  - From its declaration to the end of the `{ }` braces
    - A variable declared in a `for` loop exists only in that loop.
    - A variable declared in a method exists only in that method.




```
public static void example() {
    int x = 3;
    for (int i = 1; i <= 10; i++) {
        System.out.println(x);
    }
    // i no longer exists here
} // x ceases to exist here
```

Scaling the mirror

- Let's modify our Mirror program so that it can scale.
  - The current mirror (left) is at size 4; the right is at size 3.
- We'd like to structure the code so we can scale the figure by changing the code in just one place.

```
#================#
|      <><>      |
|    <>....<>    |
|  <>........<>  |
|<>..........<>|
|<>..........<>|
|  <>........<>  |
|    <>....<>    |
|      <><>      |
#================#
```

```
#============#
|    <><>    |
|  <>....<>  |
|<>........<>|
|<>........<>|
|  <>....<>  |
|    <><>    |
#============#
```

Class constants

- **class constant**: A fixed value visible to the whole program.
  - value can be set only at declaration; cannot be reassigned, hence the name: *constant*

- Syntax:

```
public static final type name = expression;
```

  - name is usually in ALL_UPPER_CASE

  - Examples:

```
public static final int HOURS_IN_WEEK = 7 * 24;
public static final double INTEREST_RATE = 3.5;
public static final int SSN = 658234569;
```

Assignment 2: ASCII Art