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;
}
```
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.

```java
class Example {
    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:
    
    ```java
    public static final type name = expression;
    ```
    
    - name is usually in ALL_UPPER_CASE

  - Examples:
    ```java
    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

[Image of the Space Needle]