Announcements

• Assignment 7
  – Storyboard due today
  – Assignment and web page due Thursday
    • Turn in Alice world, web page, and README file
    • Also link in web page
  – Demo due next Tuesday
• Last Java classwork is this Thursday
  – All Alice classwork must be checked off by 11/30 to receive credit
  – All Java classwork must be submitted by Dec. 4 to receive credit.

Java – Method/function format

• Method must be part of a class
• Method must have a return type
  – Return type is “void” if no return type (method)
  – DO not use the name of the class or method for any variable
• Method has list and type of parameters
• Declare types of all local variables first
  – Exception: loop variables

More on indexOf

String class = “CPS 4 and CPS 6 and CPS 4G”; System.out.println(class.indexOf(“CPS”)); System.out.println(class.indexOf(“CPS”, 6)); System.out.println(class.indexOf(“CPS”, 14));

• IndexOf with a string and number argument finds the position of the first occurrence starting from that number position on
Problem

- Given a Phrase and a word, return true if the word occurs at least twice in the phrase.

Finish Code – What does this do?

```java
public class StringExample {

  public boolean AppearTwice (String phrase, String word) {
    // declare types of variables and initial values
    int firstPosition = -1;
    int secondPosition = -1;
    // find first occurrence
    firstPosition = phrase.indexOf(word);
    // find second occurrence - FILL IN
    if (firstPosition >= 0) {
      secondPosition = phrase.indexOf(
    } if (secondPosition > 0) {
      return true;
    return false;
  }
}
```

Java Code - Note

- How many variables are there and what are their types?
- How many times is a variable declared (given its type)?
- Where is the return value?
- How many parameters and what are their types?

Adding a helper method to a class

```java
public class NameOfClass {

  public String someMethod(String [] str) {
    // code here
  }

  public int helperMethod(String str, int n) {
    // code here
  }
}
```
Adding a helper class

• Note the following
  – Names of methods and how many
  – Location of methods
  – Return types
  – Parameters
  – Where do return statements go?

Classwork today

• Create Java Project: CPS4Sec1Nov27
• Classwork today – 3 APTs, 1 is extra credit
  – Protein Counter – number of strings that have at least 3 copies of given amino acid
    • Consider a helper function to count number of amino acids in one string
  – DNAHeavyMax – most frequent occurring nucleotide
    • Consider a helper function
  – ProteinFinder – finding a protein
    • Use indexOf to find codons
    • Search for stop codon past the start codon, not from beginning of string

Extra Credit

• Include extra credit in same project.
• Submit all three APTs at the same time.