**Homework 7**

### **CMP 326: Programming Methods II**

Lehman College, City University of New York

Fall 2019

[**Homework 7-1 Textbook Section 15.16**](https://learn.zybooks.com/zybook/CUNYCMP326Fall2019/chapter/15/section/16)

1. Write a recursive method **fib**(**int n)** that takes in and **int n** and returns the result of fibonacci’s nth term

F(n) = F(n-1) + F(n-2)

F(3) = F(2) + F(1) = 1 + 1 = 2

F(2) = F(1) + F(0) = 1 + 0 = 1

F(1) = 1 //base case

F(0) = 0 //base case

1. Write a recursive method **getPowerOfXtoN(int xBase, int nExp)** that takes in 2 arguments, an **int xBase** (positive or negative), and a positive exponent **int nExp.** The method will use recursion to calculate and return the result.

Xn = X \* X(n-1)

X1 = X \* X(0)

X0 = 1

getPowerOfXtoN(2,3); //returns 8

getPowerOfXtoN(-2,3); //returns -8

1. Write a recursive method **binarySearch(String target, String [ ] words)** that takes in 2 arguments, a String **target**, and an array of Strings **words**. The method will search for the target in the array, and either return the index location where it is found, or -1 if the target is not in the array.

Hint: You will need a recursive helper method that will make the solution recursive.

1. Write a recursive method **organizeParade(int paradeLength)** that takes in the length of the parade and returns the number of different ways it can be organized based on the rules below:

A parade consists of Floats and Bands.

Bands cannot be consecutively placed

Floats can however be placed anywhere

P(n) = P(n-1) + P(n-2) when n>2

P(2) = 3 //base case: 3 ways to organize F,B || B,F || F,F

P(1) = 2 //base case: 2 ways to organize F || B (only 1 item)

Write the static utility methods in a class named **Homework7\_1.java**

**This work must be completed in your textbook**  [**ZYBooks -- CMP-326: Programming Methods I**](https://learn.zybooks.com/zybook/CUNYCMP326Fall2019/)**I**

**No other forms of submission will be accepted.**