CMSC 131

Fall 2018

Announcements

- Project #7 has been posted

Example: Factorial

Recall:

5! = 5 * 4 * 3 * 2

Code it up with loop
Code it up using recursion

What is the running time (Big-O) for each?
Which one is likely to be faster in practice?

Example: Fibonnacci Sequence

1, 1, 2, 3, 5, 8, 13, 21, 34, …

Write this method recursively:

```
// returns the nth Fibonnacci number
int fib(int n) {…}
```

What's the running time?
How does this compare to iterative solution?
Can the recursion be improved?

Example: Exponentiation

Pretend there is no exponentiation function in Java.

Let's code this up recursively:

```
// returns a^b
// assume a, b are non-negative
int power(int a, int b) {…}
```