Announcements

• Project #7 has been posted
Example: Factorial

Recall:

\[ 5! = 5 \times 4 \times 3 \times 2 \]

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: Fibonacci Sequence

1, 1, 2, 3, 5, 8, 13, 21, 34, ...

Write this method recursively:

// returns the nth Fibonacci 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:

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