

COP 3337  
Programming II

Examination 2

Name: \_\_\_\_\_

SAMPLE

This exam has 3 additional pages. Please answer each question on the page on which it is asked. If you need more space than has been provided, you are doing something wrong.

1. [30 pts] The binomial coefficients are defined as follows

$$B(n, k) = \begin{cases} 1 & \text{if } k = 0 \text{ or } k = N \\ B(n-1, k-1) + B(n-1, k) & \text{otherwise} \end{cases}$$

Implement this function to compute the binomial coefficient:

```
// 0 <= k <= n
public static long binomial( int n, int k )
{
```

2. [30 pts] Method `reverseString` returns the reversal of a string. For instance, the following table shows the result of some calls to `reverseString`

```
str    reverseString( str )
==     =====
""     ""
"abc"  "cba"
"xabc" "cbax"
```

Implement `reverseString` recursively.

```
public static String reverseString( String str )
{
```

3. [40 pts] Implement a method, `printEmptyFiles`, that prints the full names of all files in a directory that are empty. A regular file is empty if its size is zero. A directory is empty if it has no files in it.

The `File` class has the following useful methods:

```
boolean isDirectory( );
long length( );
File [ ] listFiles( );
String getAbsolutePath( );
```

Implement `printEmptyFiles` below.

```
// If d is a regular file, print its name only if it is zero-length
// If d is a directory, with no files it it, print its name.
// Otherwise, search d and all subdirectories for empty files.
public static void printEmptyFiles( File d )
{
```