

### 369 Combinations

Computing the exact number of ways that  $N$  things can be taken  $M$  at a time can be a great challenge when  $N$  and/or  $M$  become very large. Challenges are the stuff of contests. Therefore, you are to make just such a computation given the following:

**GIVEN:**

$$5 \leq N \leq 100, \quad \text{and} \quad 5 \leq M \leq 100, \quad \text{and} \quad M \leq N$$

Compute the **EXACT** value of:

$$C = \frac{N!}{(N - M)! \times M!}$$

You may assume that the final value of  $C$  will fit in a 32-bit Pascal LongInt or a C long.

For the record, the exact value of 100! is:

93,326,215,443,944,152,681,699,238,856,266,700,490,715,968,264,381,621,  
 468,592,963,895,217,599,993,229,915,608,941,463,976,156,518,286,253,  
 697,920,827,223,758,251,185,210,916,864,000,000,000,000,000,000,000,000

#### Input and Output

The input to this program will be one or more lines each containing zero or more leading spaces, a value for  $N$ , one or more spaces, and a value for  $M$ . The last line of the input file will contain a dummy  $N$ ,  $M$  pair with both values equal to zero. Your program should terminate when this line is read.

The output from this program should be in the form:

$N$  things taken  $M$  at a time is  $C$  exactly.

#### Sample Input

```
100 6
 20 5
 18 6
 12 3
  4 2
  0 0
```

#### Sample Output

```
100 things taken 6 at a time is 1192052400 exactly.
 20 things taken 5 at a time is 15504 exactly.
 18 things taken 6 at a time is 18564 exactly.
 12 things taken 3 at a time is 220 exactly.
  4 things taken 2 at a time is 6 exactly.
```