

**NAME**

factor – discover prime factors of a number

**SYNOPSIS**

**/usr/games/factor**

**DESCRIPTION**

When *factor* is invoked, it prompts for a number to be typed in. If you type in a positive number less than  $2^{56}$  (about  $7.2 \times 10^{16}$ ) it will factor the number and print its prime factors; each one is printed the proper number of times. Then it waits for another number. It exits if it encounters a zero or any non-numeric character.

Maximum time to factor is proportional to  $\sqrt{n}$  and occurs when  $n$  is prime or the square of a prime. It takes 1 minute to factor a prime near  $10^{13}$ .

**DIAGNOSTICS**

“Ouch.” for input out of range or for garbage input.