Fibonacci factorization

The Mysterious Affair at Byte Court

Hercule was quietly on hollydays (Noël) at Byte Court when Fibonacci and Lucas (well-dressed) knocked at his door.

They came in, and the first one said : "Monsieur, can you factorise my first 1001 terms, please?".

Hercule said : "It was useless to come in to ask that, but since you are here, I'll do that very quickly."

Then Lucas said : "It's not a speed challenge, we like Styles too, the shorter your code is, the best your score is."

Output

You have to output 1001 lines, the factorization of the 1001 first terms of the Fibonacci sequence. See sample for output details.

Example

F(0)= 0
F(1)= 1
F(2)= 1
F(3)= 2
F(4)= 3
F(5)= 5
F(6)= 2^3
F(7)= 13
F(8)= 3 * 7
F(9)= 2 * 17
F(10)= 5 * 11
F(11)= 89
F(12)= 2^4 * 3^2
[...]
F(1000)= 3 * 5^3 * 7 * 11 [...]