Assignment 1

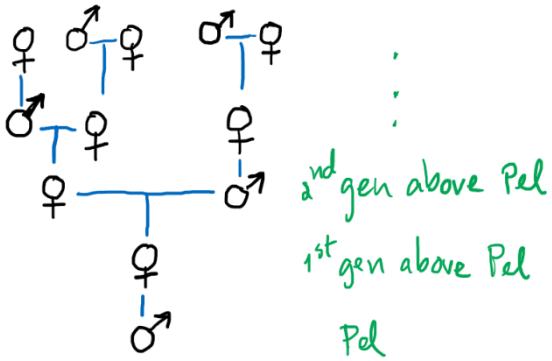
[10 Marks] The Harvesters, the alien race in the movie ID4, has a special form of breeding. In every hive, a queen (female) lays all the eggs. An unfertilized egg hatches into a drone (male). An egg that is fertilized by a male drone hatches in a female worker, who doesn't lay egg at all.

A female worker can tu

rn into a queen with a special process, but in the end there will be only one queen left per hive anyway.

Consider a family tree of a male drone, named Pel. In the first generation above him, his parent is only the queen. In the second generation above Pel, the queen has two parents (from fertilization). The father of the queen has only one female parent, while the mother of the queen has two parents. So there are three Harvesters in the third generation above Pel.

In diagram below, male is the symbol with arrow and female is the symbol with cross.



Write a program that utilizes memoization technique to compute the number of Harvesters in the nth generation above Pel.

INPUT:

One number, the generation above Pel, $n, 1 \leq n \leq 100$

OUTPUT:

the number of Harvesters in the n^{th} generation above Pel

EXAMPLE

INPUT	OUTPUT
28	514229
97	135301852344706746049

NOTE: Only three test cases (out of 10) will have $n \leq 30$