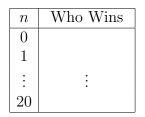**Honors HW05. Morally DUE Mon Apr 4**

Nim Mark is the variant where the person who can't move WINS (so when there are 0 stones, player 1 wins).

In this problem we consider 1-pile Nim Mark where the set of moves is $\{1, 2, 3\}$.

1. (20 points) Work out by (by hand or by code) who wins this game if the number of stones is $0, 1, \ldots, 20$. Give us your table. It should be of the form, though the *Who Wins* column will be filled in.

n	Who Wins
0	
1	
$\vdots$	$\vdots$
20	

NO proof or reasoning required, but if its not perfect you get 0.

2. (10 points) Make a conjecture of the form

   If BLANK1 then P1 wins.

   If BLANK2 then P2 wins.

   Your conjecture should covers all cases.

3. (70 points) Prove your conjecture.