Comp0002 Haskell
Lab exercise sheet 5

1. Write an interactive program called `nimGame` that allows two people to use a computer to play the game of **nim**.

   `http://en.wikipedia.org/wiki/Nim`

   The program should display the board, update it as the game progresses and announce the winner.

2. Redevelop your game to create a version in which a single user plays against the computer.

EXTRA

3. Consider the factorial function `fac`:

```
- - pre: n >= 0
- - post fac n = n!
fac :: Int -> Int
```

   Write a definition for `fac`. Find the variant and use simple induction to show that the function definition is correct.

4. Consider the Fibonacci function `fib`:

```
- - pre: n >= 0
- - post fib n = fibonacci(n)
- - where fibonacci(n) is the nth fibonacci number
fib :: Int -> Int
```

   Write a definition for `fib`. Find the variant and use course of values induction to show that the function definition is correct.