Problem 0: Registration Problem

Description

A number is a perfect square, or a square number, if it is the square of a positive integer. For example, 25 is a square number because $5^2 = 5 \times 5 = 25$; it is also an odd square.

The first 5 square numbers are: $1, 4, 9, 16, 25$, and the sum of the odd squares is $1 + 9 + 25 = 35$.

Among the first $308,000$ square numbers, what is the sum of all the odd squares?

Solution

```haskell
module Problem0000 where

squareNumbers :: [Integer]
squareNumbers = [x*x | x <- [1..]]

filterOddNumbers :: [Integer] -> [Integer]
filterOddNumbers = filter odd

solve :: Integer
solve = sum (filterOddNumbers (take 308000 squareNumbers))
```