1 Problem

$2^{15} = 32768$ and the sum of its digits is $3 + 2 + 7 + 6 + 8 = 26$.

What is the sum of the digits of the number 2^{1000}?

2 Solution

```
import Data.Map
sumDigits :: [Char] -> Int
sumDigits "" = 0
sumDigits (x:xs) = (read (x:"") :: Int) + sumDigits xs
pDigitsSum :: (Integral a) => a -> IO ()
pDigitsSum 1 = do
  putStrLn $ "2^1    = 2                 --> 2"
  return ()
pDigitsSum n = do
  putStrLn $ "2^" ++ show n ++ "       = " ++ show (2 ↑ n) ++ "                  --> " ++ (show ∘ sumDi
  pDigitsSum (n - 1)
  return ()
main = do
  putStrLn $ "The sum of the digits of 2^1000 = " ++ show (sumDigits $ show $ 2 ↑ 1000) ++ "."
```

3 Result

```
./runhaskell problem16.lhs

The sum of the digits of 2^1000 = 1366.
```

The sum of the digits is 1366.