

```
ghci>
ghci> primes
[2,3,5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73,79,83,89,97,101,103,107,109,113,127,131,137,139,149,151,157,163,167,173,179,181,191,193,197,199,211,223,227,229,233,239,241,251,257,263,269,271,277,281,283,293,307,311,313,317,331,337,347,349,353,359,367,373,379,383,389,397,401,409,419,421,431,433,439,443,449,457,461,463,467,479,487,491,499,503,509,521,523,541,547,557,563,569,571,577,587,593,599,601,607,613,617,619,631,641,643,647,653,659,661,673,677,683,691,701,709,719,727,733,739,743,751,757,761,769,773,787,797,809,811,821,823,827,829,839,853,857,859,863,877,881,883,887,907,911,919,929,937,941,947,953,967,971,977,983,991,997,1009,1013,1019,1021,1031,1033,1039,1049,
```

`primes :: [Int]`

`primes = sieve [2..]`

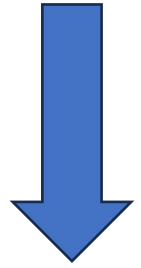
`sieve :: [Int] -> [Int]`

`sieve (p:xs) =`

`p : sieve [x | x <- xs, mod x p /= 0]`

```
ghci>
ghci> take 5 primes
[2,3,5,7,11]
ghci>
ghci> takeWhile (<10) primes
[2,3,5,7]
ghci>
```

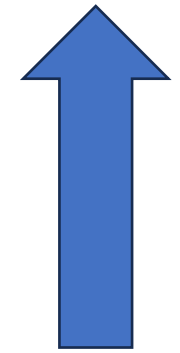
$[(3, 5), (5, 7), (11, 13)\dots]$



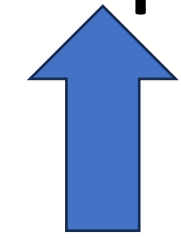
$[(2, 3), (3, 5), (5, 7), (7, 11), (11, 13)\dots]$



`twins = filter twin (zip primes (tail primes))`



$[2, 3, 5, 7, 11, 13, \dots]$



$[3, 5, 7, 11, 13, \dots]$