

$[x^2|x \leftarrow [1 \dots 10]]$: The pipe here designates the separation between the output function and the input.

Definition : WHNF: Weak Head Normal Form

”Normal form” is that the expression is fully evaluated. ’Weak head normal form’ means the expression is only evaluated as far as is necessary to reach a data constructor.

An expression cannot be in normal form or weak head normal form if the outermost part of the expression isn’t a *data constructor*.

```
Prelude> let x = [1, undefined, 3]
Prelude> length x
3
```

Length is strict in the spine but not the values. But sum does.

```
Prelude> mySum [1..5]
1 + (2 + (3 + (4 + (5 + 0))))
1 + (2 + (3 + (4 + 5)))
1 + (2 + (3 + 9))
1 + (2 + 12)
1 + 14
15
```

Transforming lists of values

map : used with [a]
fmap: used with data

1 Product type and Sum type

Definition : Product Type

A product type is type made of a set of type compounded over each other. (Tuple, data constructors with more than one argument)

Definition : Sum Type

A sum type is a type whose terms are terms in either type, but not simultaneously.

Cons cell is a data constructor and a product of the types a and [a].