0.0.1 Remove

The inverse of the *append* Operations.

$$remove(coll, idx) =^{\sim} append(coll, idx)$$

The operation *remove* will return a Collection minus the Value removed from the specified Numeric Index

$$
\begin{array}{|l}
\hline
Remove[Collection, \mathbb{N}] \\
coll?\,, coll! : Collection \\
idx? : \mathbb{N} \\
remove\_ : Collection \times \mathbb{N} \nrightarrow Collection \\
\hline
coll! = remove(coll?\,, idx?\,) \bullet \\
\quad let\ coll' == front(\{\, i : \mathbb{N} \mid i \in 0 \,..\, idx? \,\} \upharpoonright coll?\,) \\
\quad\quad coll'' == tail(\{\, j : \mathbb{N} \mid j \in idx? \,..\, \# coll? \,\} \upharpoonright coll?\,) \bullet \\
\quad = coll' \frown coll'' \Rightarrow coll?_{idx?} \notin coll' \land coll?_{idx?} \notin coll'' \land \# coll! = \# coll? - 1 \\
\hline
\end{array}
$$

such that

$$
\begin{array}{ll}
X = \langle x_0, x_1, x_2 \rangle & \\
\quad x_0 = 0 & \\
\quad x_1 = foo & \\
\quad x_2 = baz & \\
remove(X, 0) = \langle foo, baz \rangle & [0 \text{ was removed from } X] \\
remove(X, 1) = \langle 0, baz \rangle & [\text{foo was removed from } X] \\
remove(X, 2) = \langle 0, foo \rangle & [\text{baz was removed from } X] \\
remove(X, 3) = \langle 0, foo, baz \rangle = X & [\text{nothing at 3, X unaltered}]
\end{array}
$$