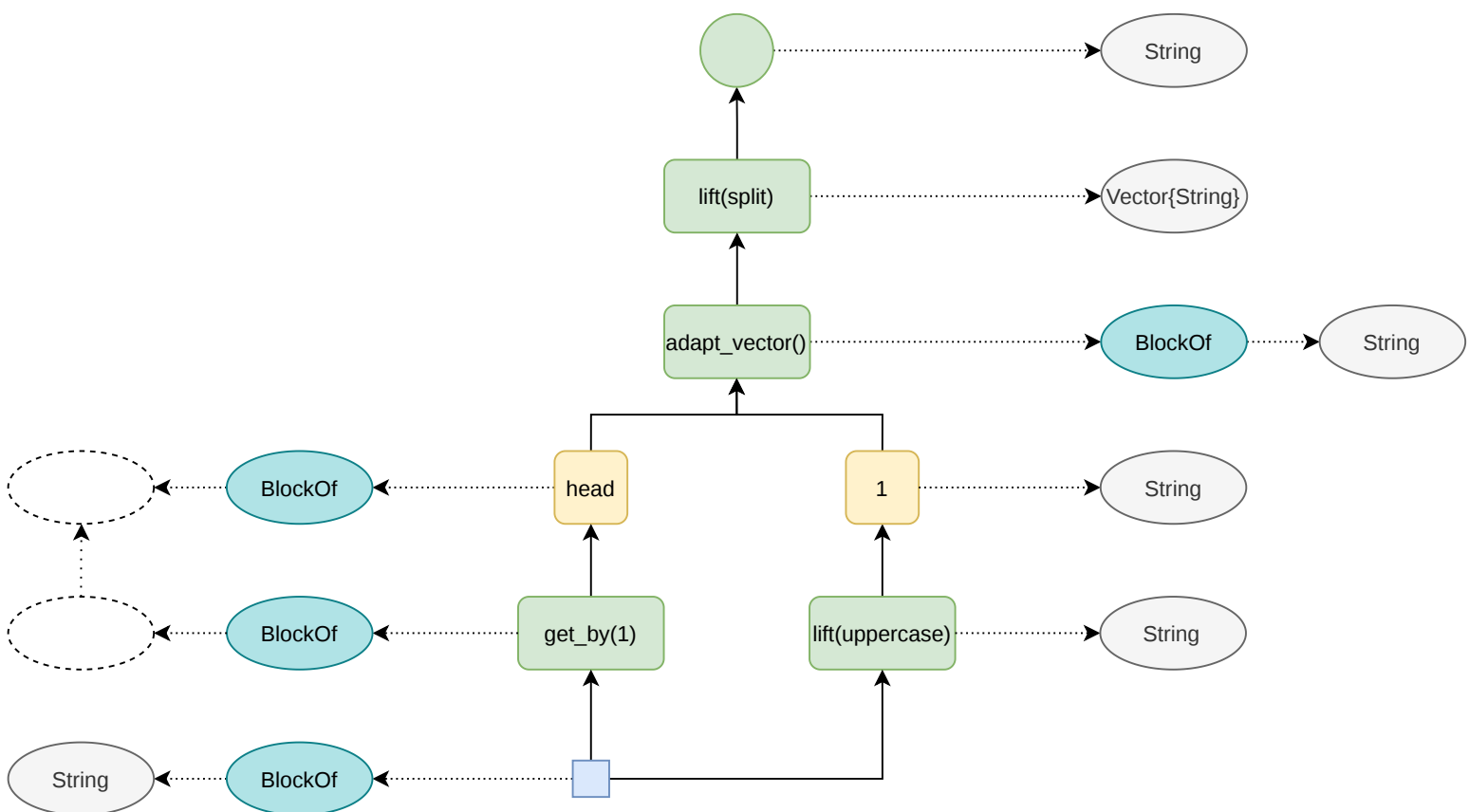




The diagram illustrates the transformation of a flat table into a hierarchical tree structure through a series of steps:

- Initial State:** A flat table with two columns: an index (1) and a value ("Hello World").
- Transformation:** The value "Hello World" is split into an array of strings: ["Hello", "World"].
- Indexing:** The array is indexed. The first element "Hello" is assigned index 1, and the second element "World" is assigned index 2.
- Normalization:** The values are converted to uppercase: "HELLO" and "WORLD".
- Tree Structure:** The indexed data is organized into a tree structure. The root node (index 1) has two children: a left child (index 1) and a right child (index 1). The left child has two children: a left child (index 1) and a right child (index 2). The right child has one child (index 1).
- Final State:** The final tree structure is shown, with the root node (index 1) having two children: a left child (index 1) and a right child (index 1). The left child has two children: a left child (index 1) and a right child (index 2). The right child has one child (index 1).



wrap()



chain\_of(tuple\_of(2), column(1))



sieve\_by()



chain\_of(wrap(), block\_length())



@query "Hello World" split(it)

```
chain_of(
  wrap(),
  with_elements(
    chain_of(
      wrap(),
      lift(split),
      adapt_vector()),
    flatten())
```



untrace(n::NodeRef, guard::NodeRef)::Tuple{Pipeline,Vector{NodeRef}}







@query "Hello World" split(it)

```
chain_of(
  wrap(),
  with_elements(
    chain_of(
      wrap(),
      lift(split),
      adapt_vector()),
    flatten())
```

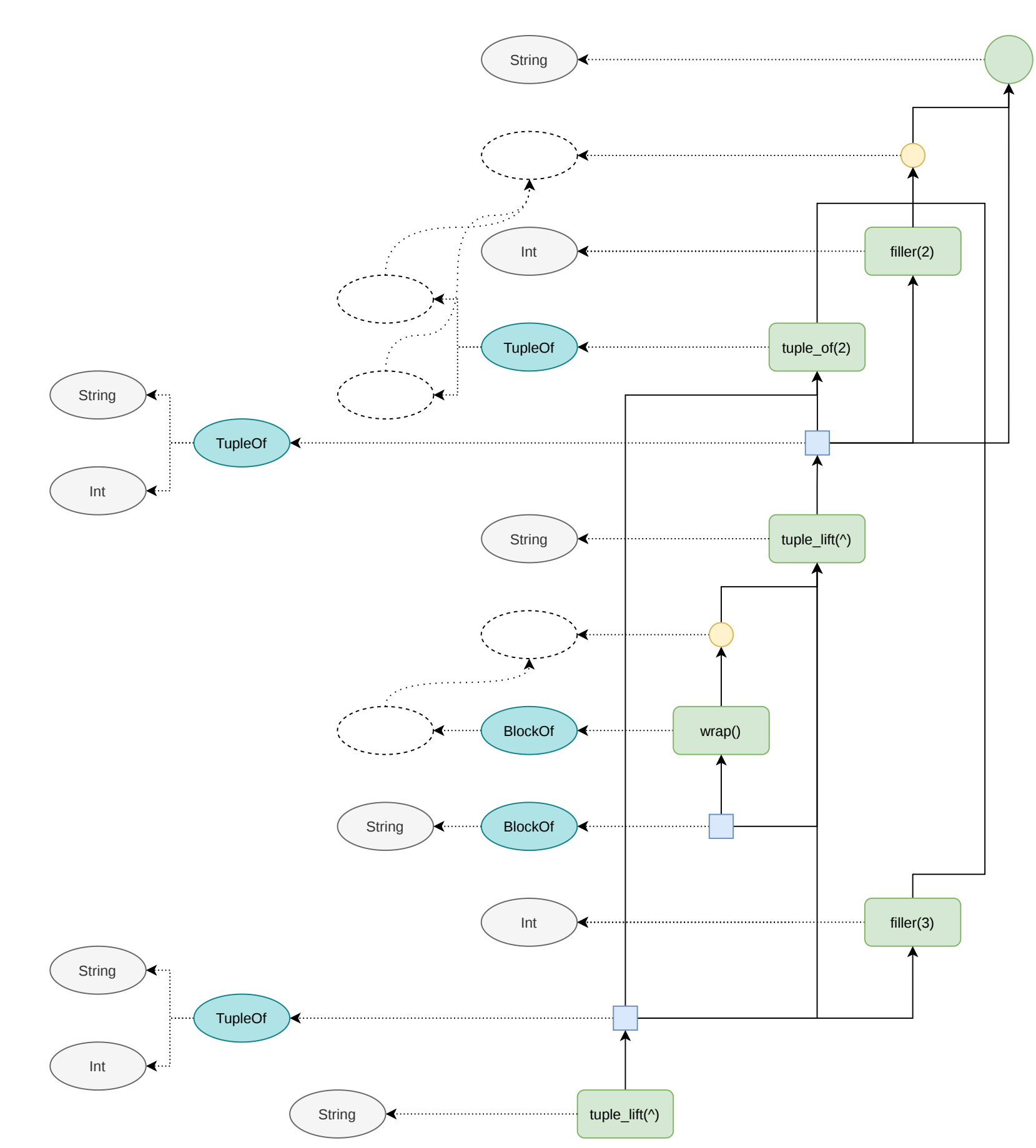






`untrace(n::NodeRef, guard::NodeRef)::Tuple{Pipeline,Vector{NodeRef}}`

`{it ^ 2, (it ^ 2) ^ 3}` `chain_of(f, tuple_of(g, h)) => tuple_of(chain_of(f, g), chain_of(f, h))`



`untrace(n::NodeRef, guard::NodeRef)::Tuple{Pipeline,Vector{NodeRef}}`

@query "Hello World" split(it)

```
chain_of(
  wrap(),
  with_elements(wrap()),
  with_elements(lift(split)),
  with_elements(adapt_vector()),
  flatten())
```

