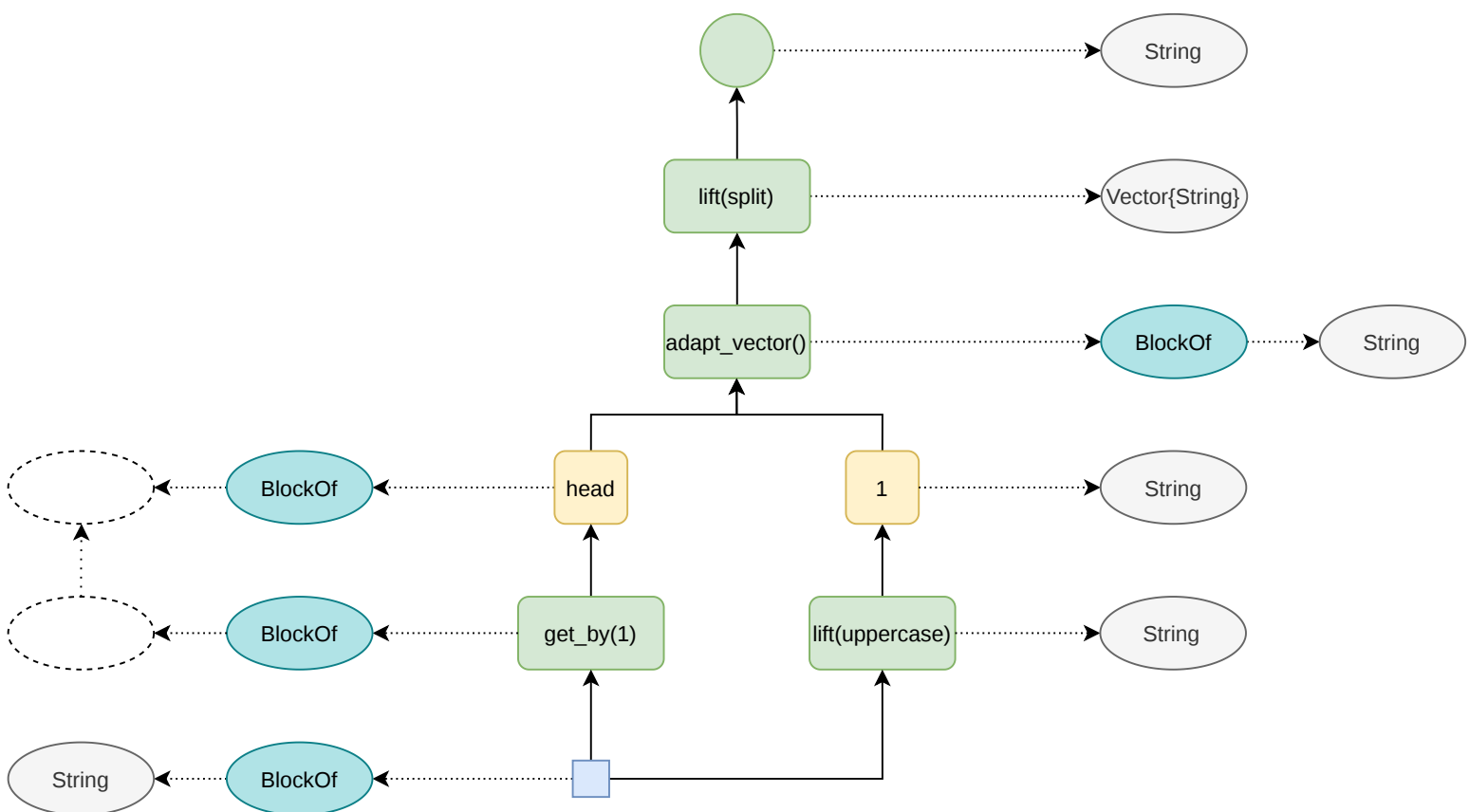




The diagram illustrates the transformation of a flat table into a hierarchical tree structure through four stages, connected by large grey arrows:

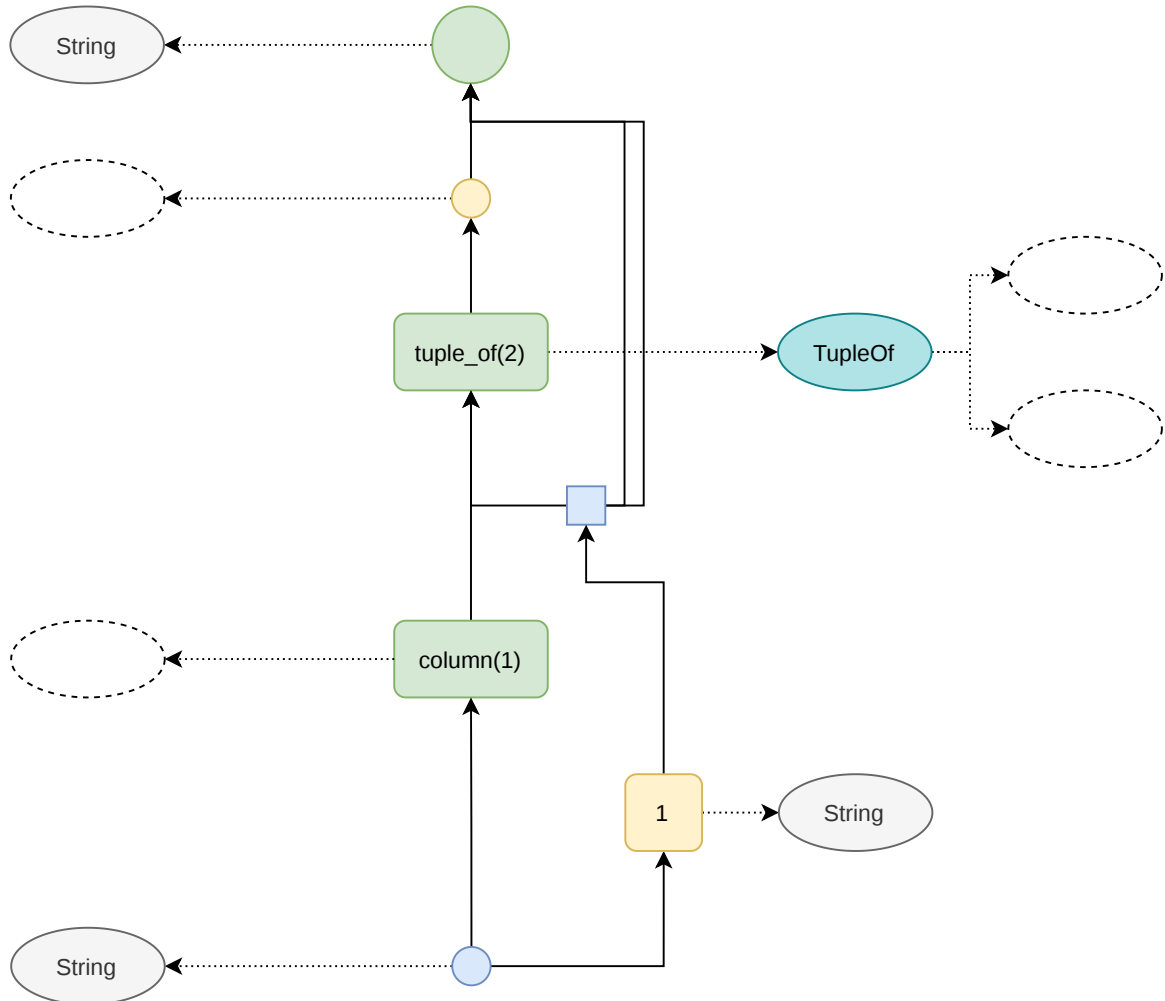
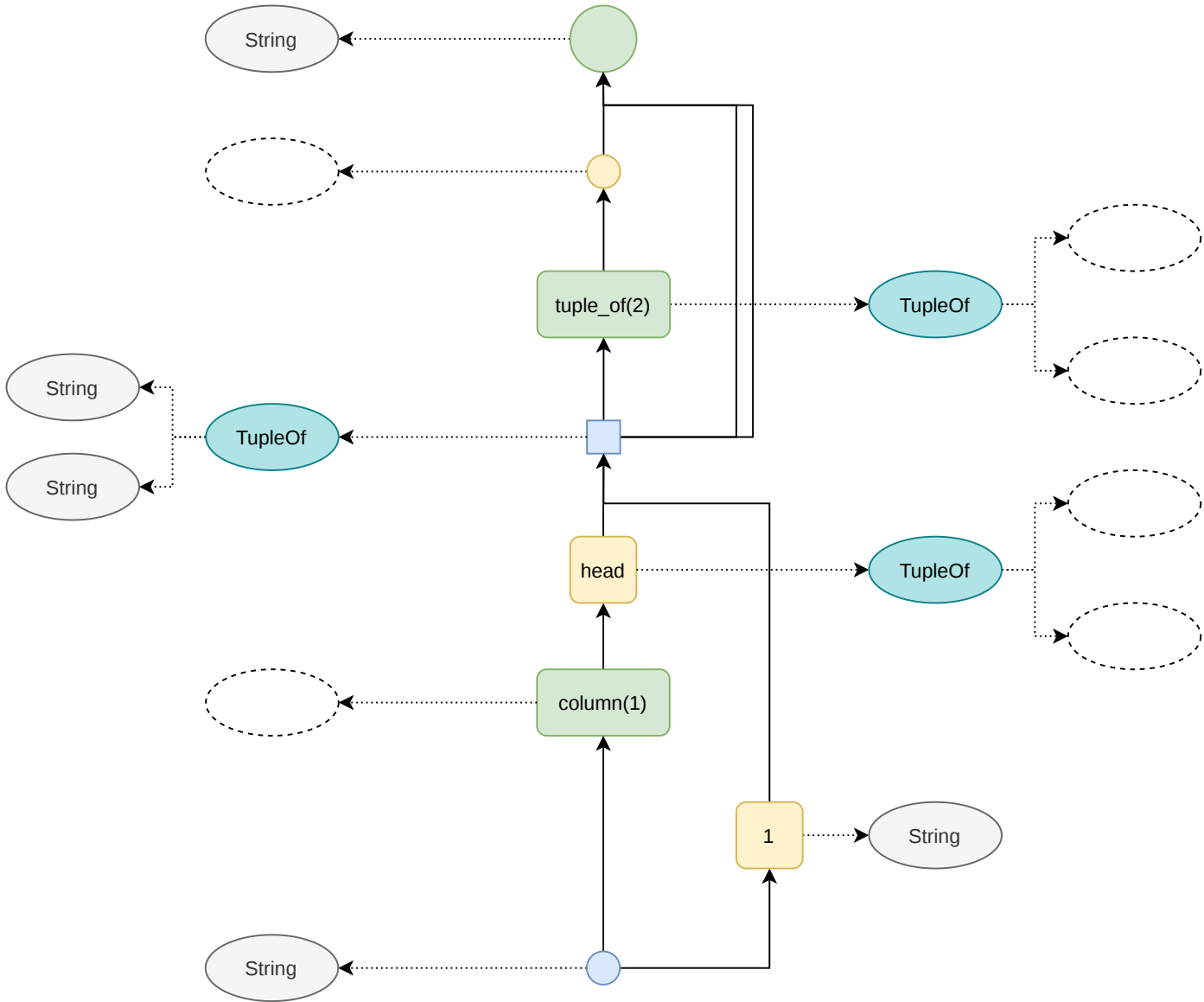
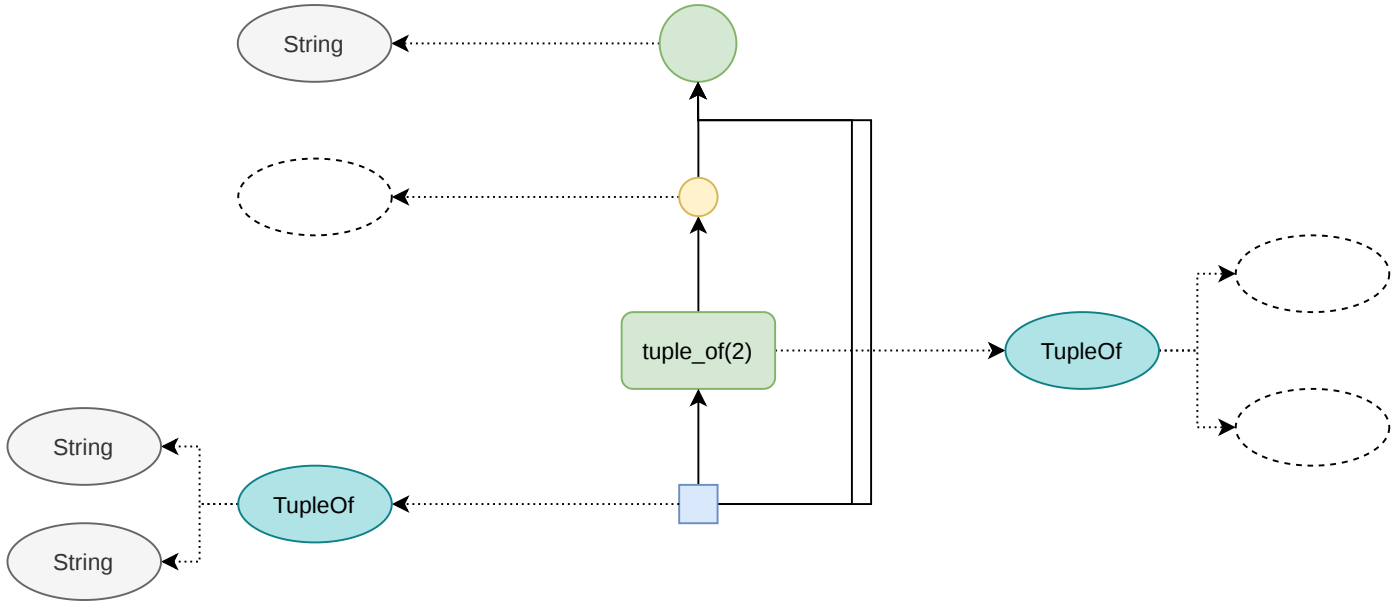
- Stage 1:** A flat table with two columns: an index column (1) and a value column ("Hello World").
- Stage 2:** The table is transformed into a hierarchical structure. The index column is split into two rows (1 and 2), and the value column is split into two rows ("Hello" and "World"). A new root node is created, with two children: a table with index 1 and value 1, and a table with index 1 and value "Hello".
- Stage 3:** The hierarchical structure is further transformed. The index column is split into two rows (1 and 2), and the value column is split into two rows ("HELLO" and "WORLD"). A new root node is created, with two children: a table with index 1 and value 1, and a table with index 1 and value "HELLO".
- Stage 4:** The hierarchical structure is further transformed. The index column is split into two rows (1 and 2), and the value column is split into two rows ("HELLO" and "WORLD"). A new root node is created, with two children: a table with index 1 and value 1, and a table with index 1 and value "HELLO".



wrap()



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



sieve\_by()

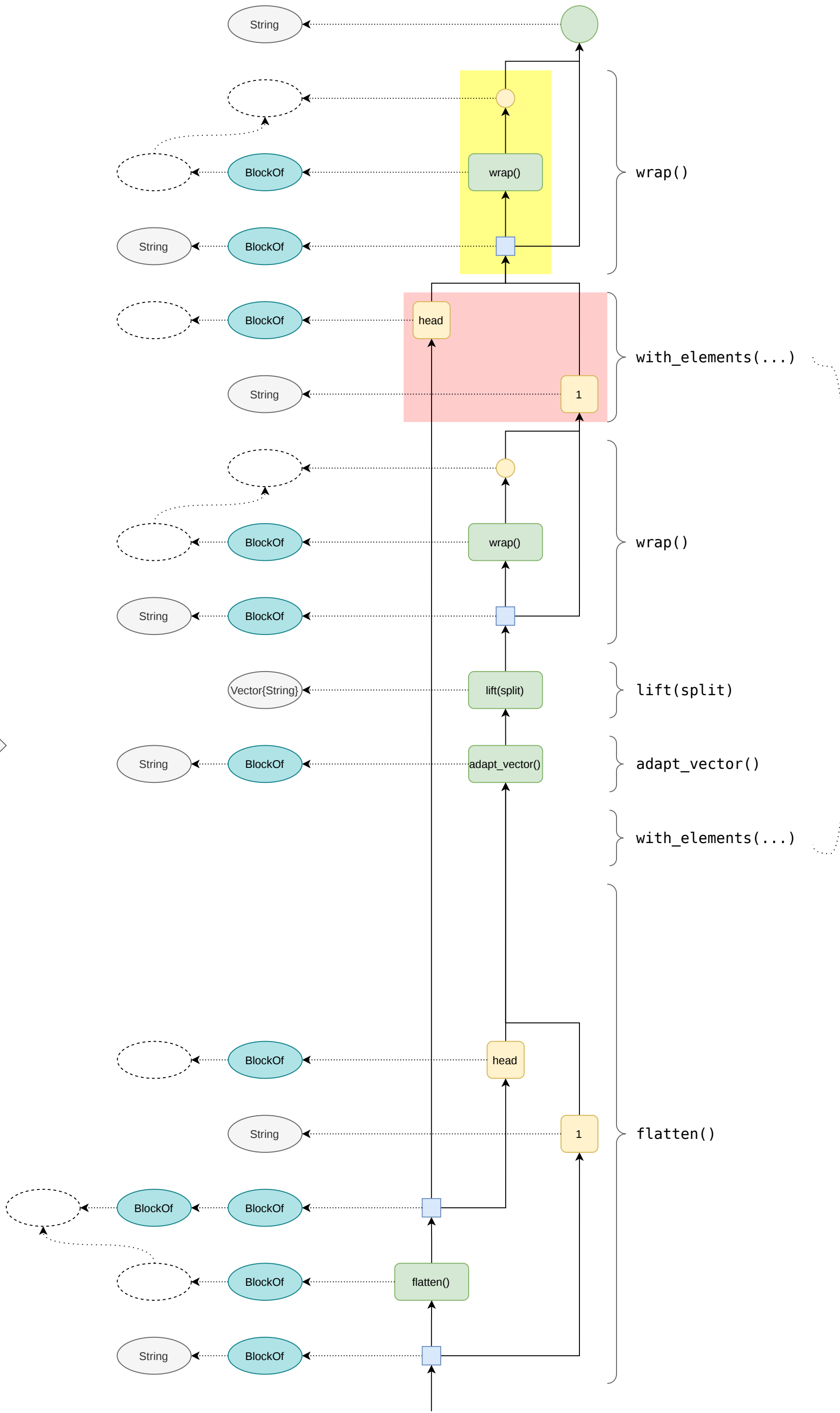
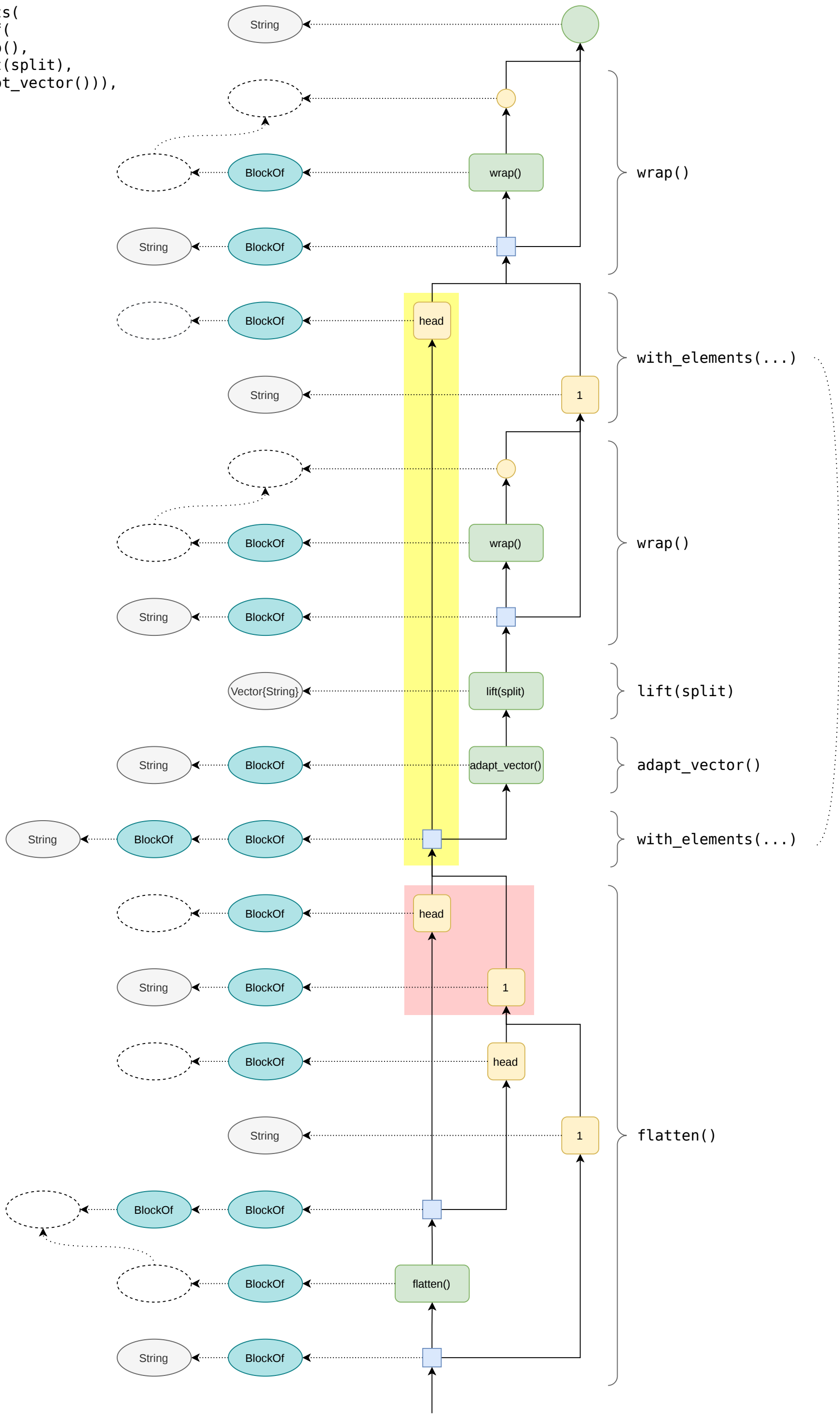


chain\_of(wrap(), block\_length())



@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}}

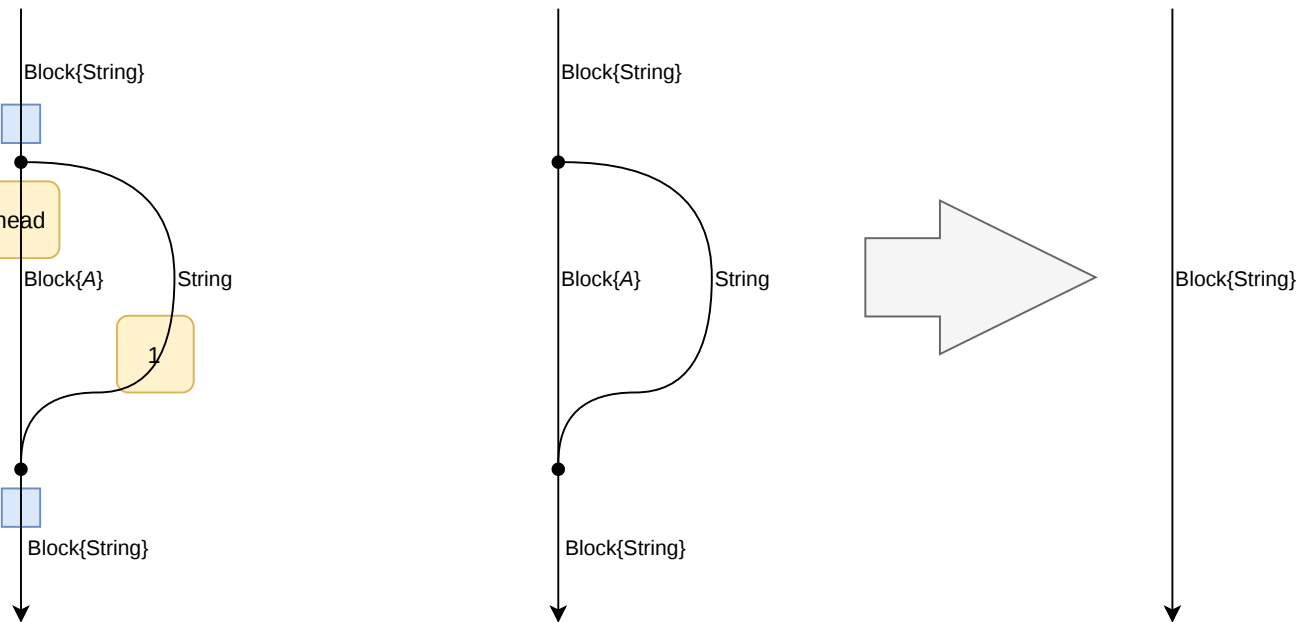






@query "Hello World" split(it)

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



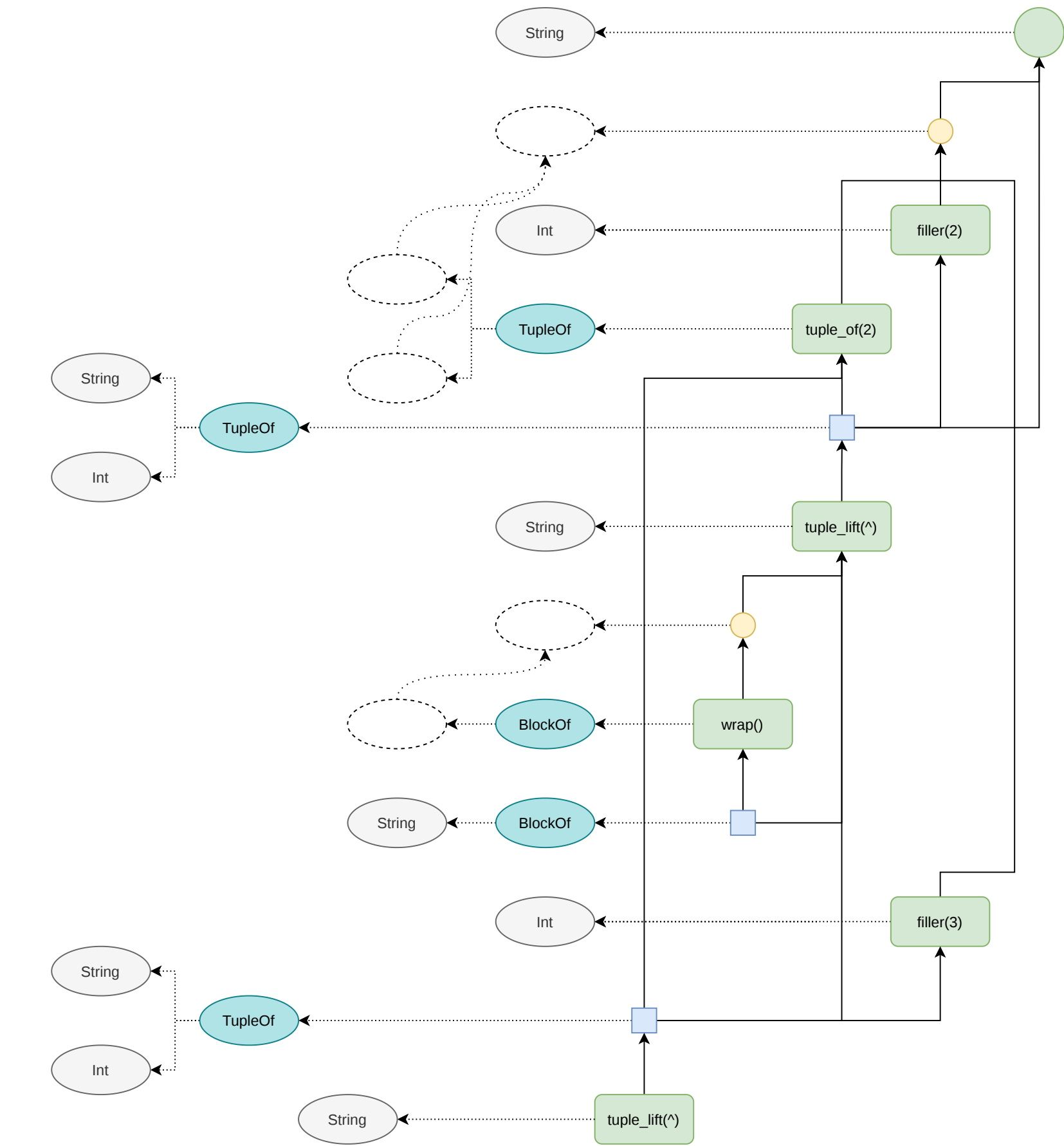




`untrace(n::NodeRef, guard::NodeRef)::Tuple{Pipeline,Vector{NodeRef}}`

`{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())
```

