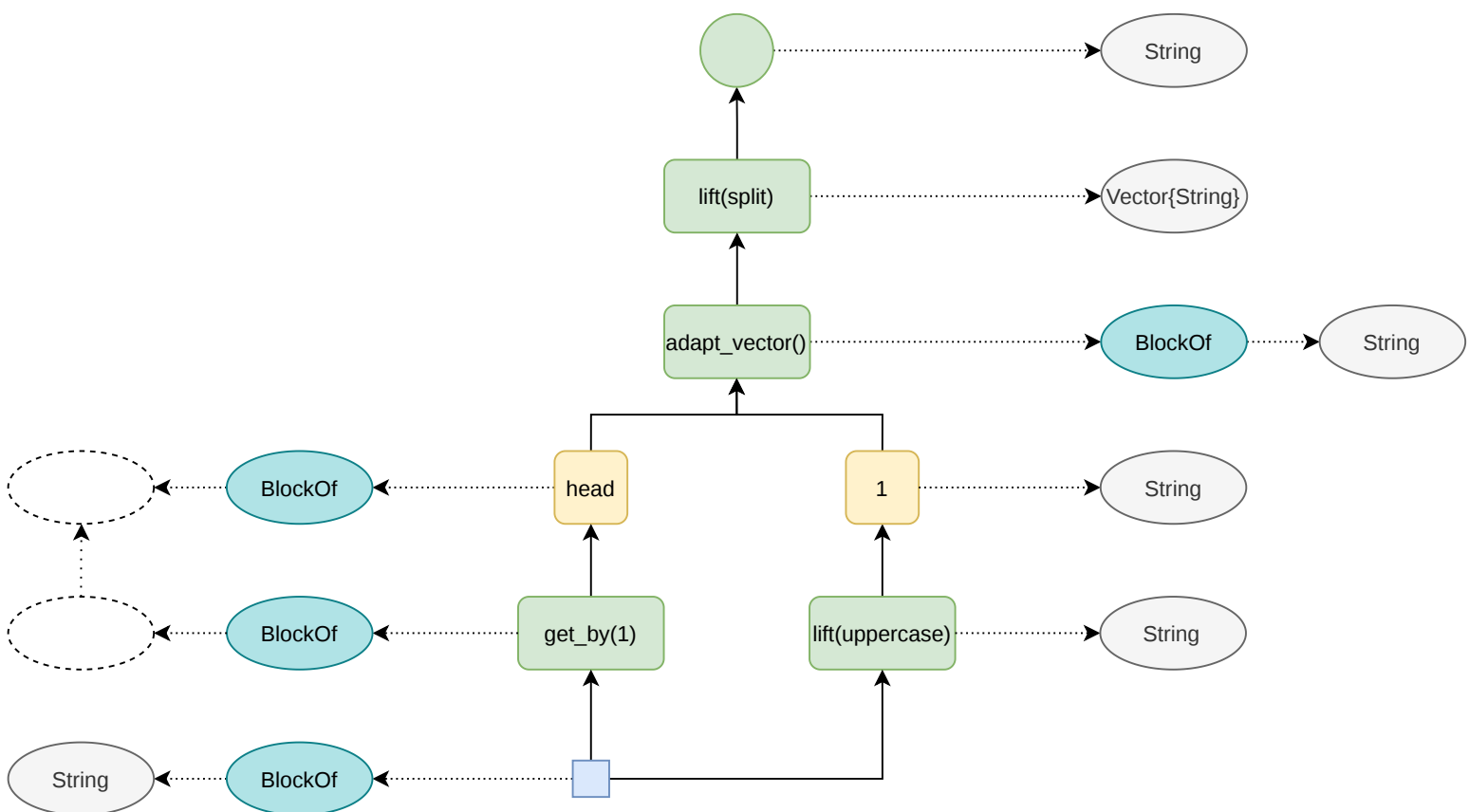




The diagram illustrates the transformation of a flat table into a hierarchical tree structure through four stages, connected by large grey arrows:

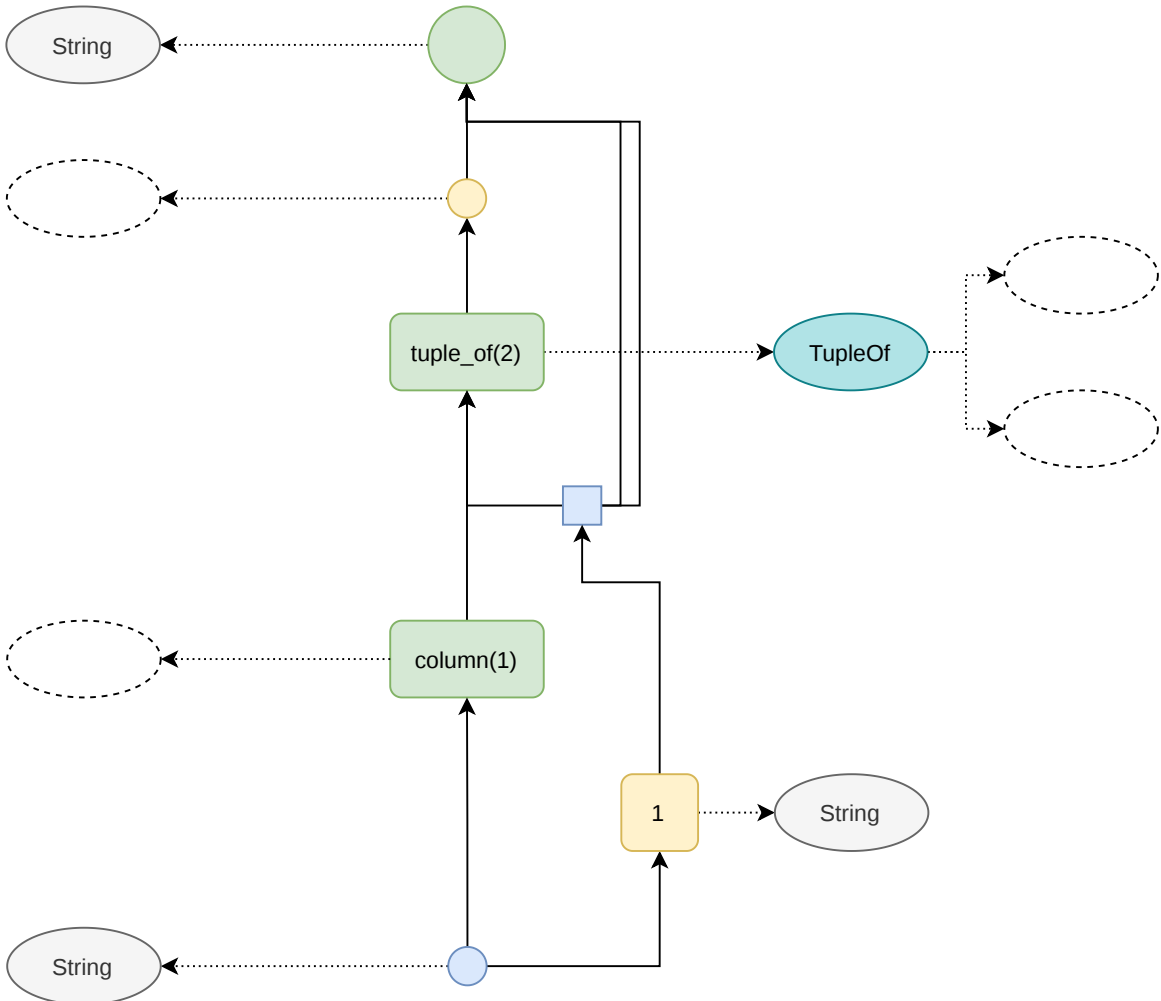
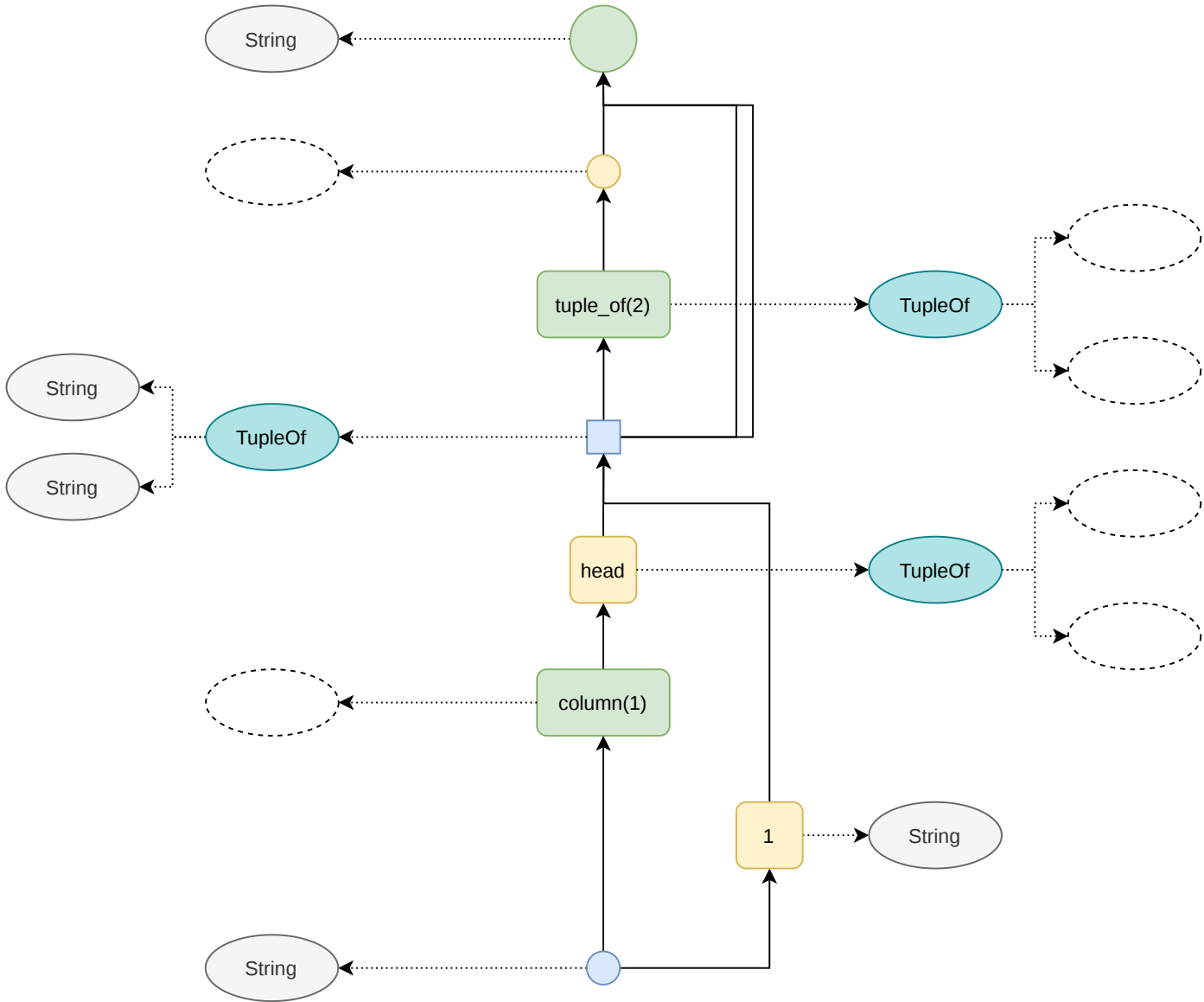
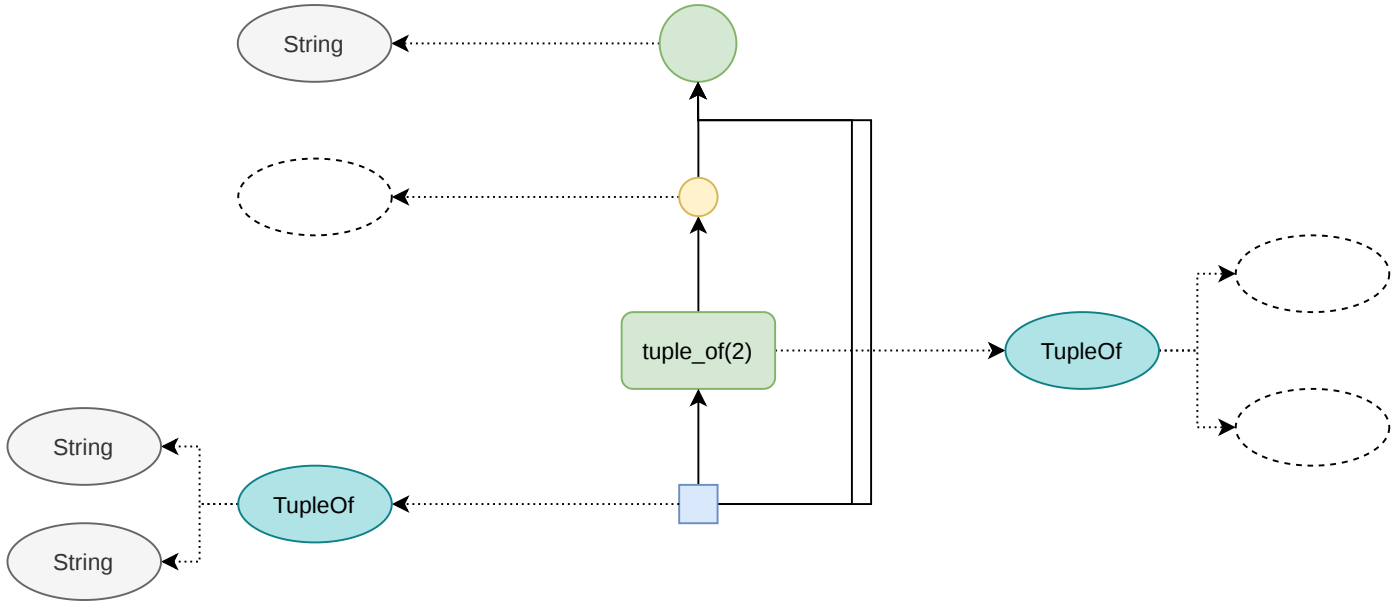
- Stage 1:** A flat table with two columns: an index column (1) and a value column ("Hello World").
- Stage 2:** The table is transformed into a hierarchical structure. The root node is a table with one column (1) and one row (String["Hello", "World"]). This root branches into two child nodes, each a table with two columns (1, 2) and two rows (1, 3) and (2, "Hello"/"World").
- Stage 3:** The child nodes are further transformed. The left child node branches into two nodes with values 1 and 3. The right child node branches into two nodes with values "HELLO" and "WORLD".
- Stage 4:** The final structure is a tree where the root node branches into two nodes, each of which branches into two nodes, resulting in a total of eight leaf nodes. The leaf nodes under the left child have values 1, 3, 1, and 2. The leaf nodes under the right child have values 1, 1, 1, and 1.



wrap()



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



sieve\_by()

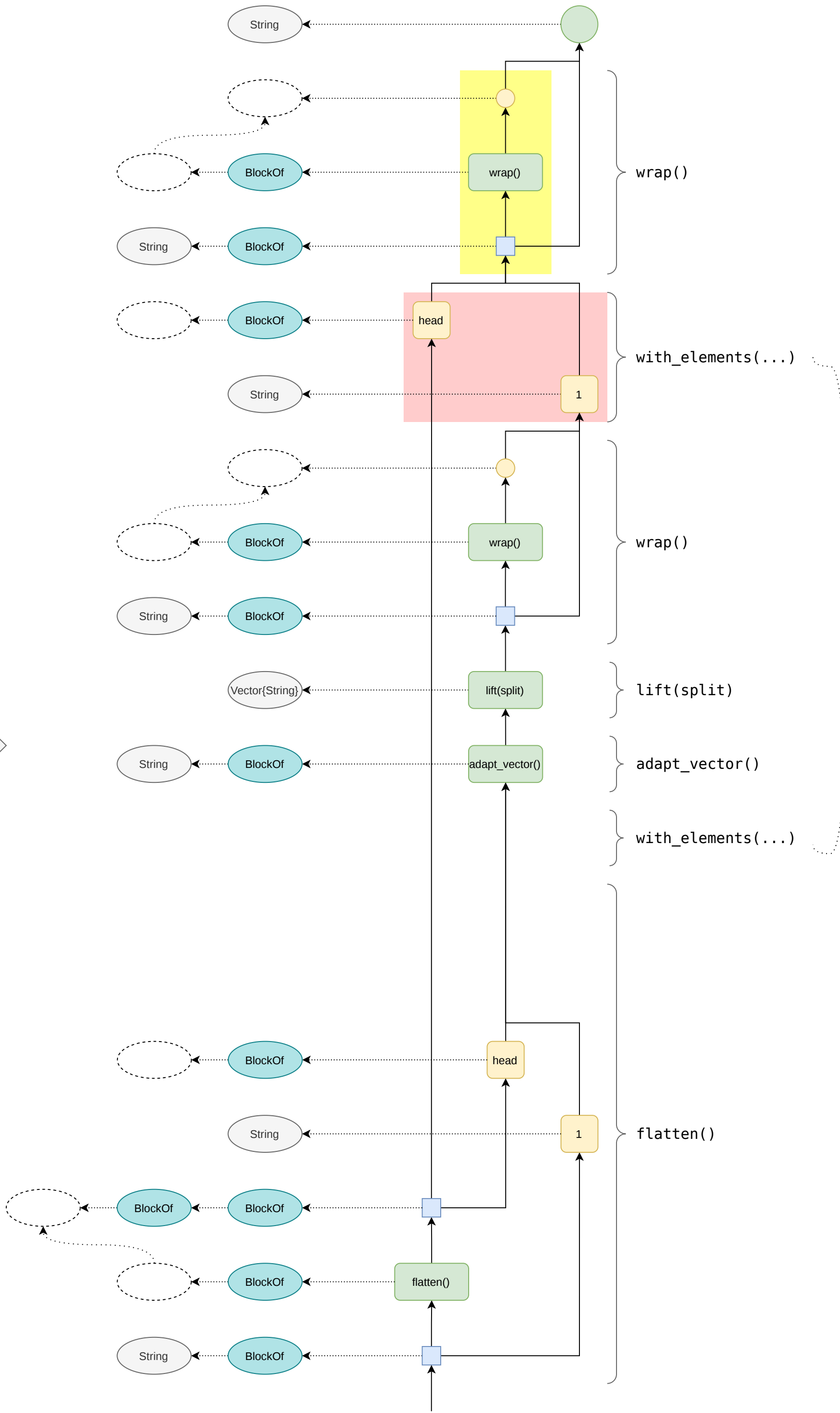
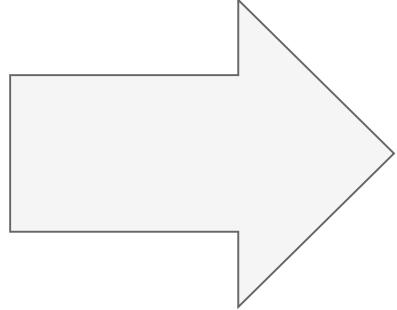
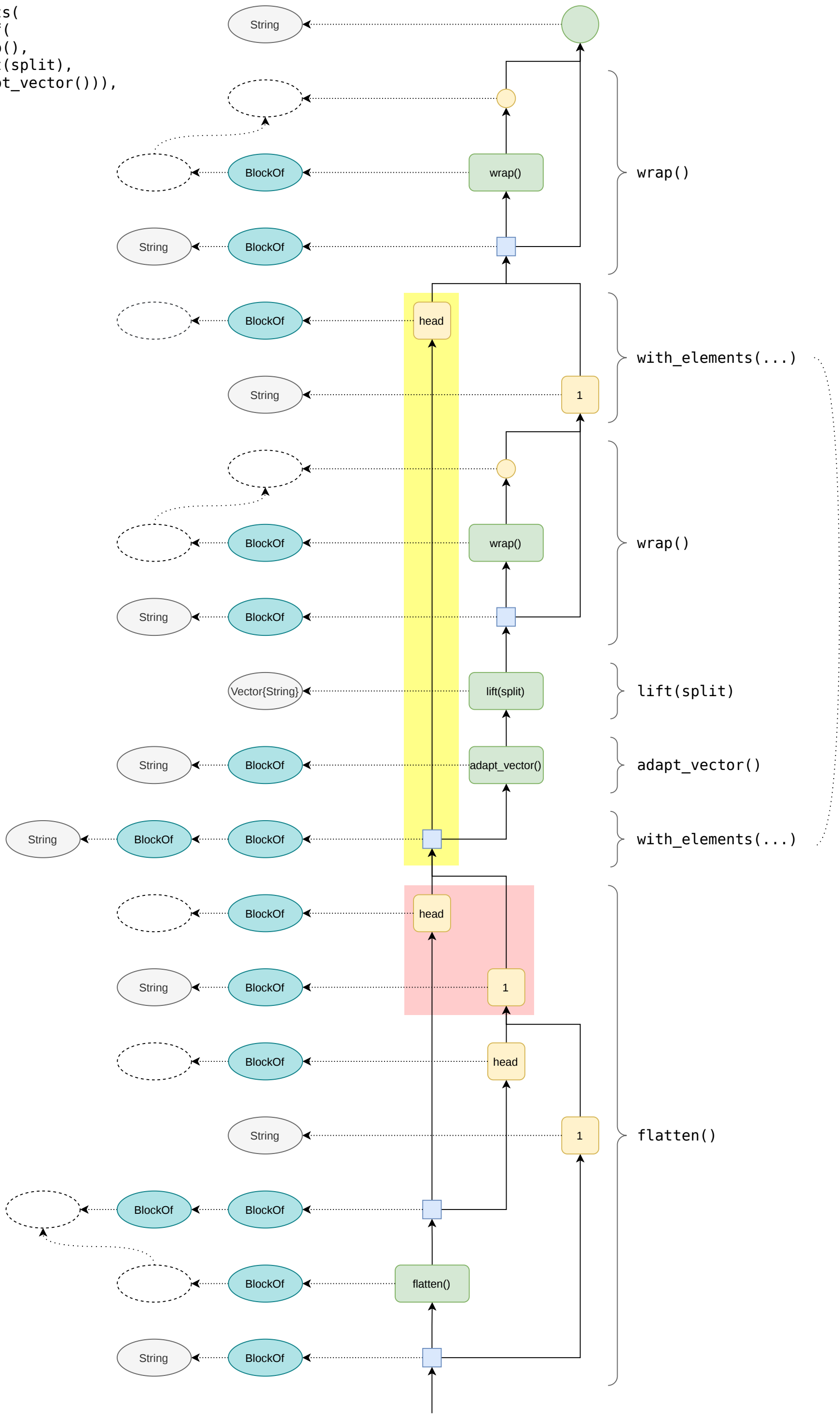


chain\_of(wrap(), block\_length())

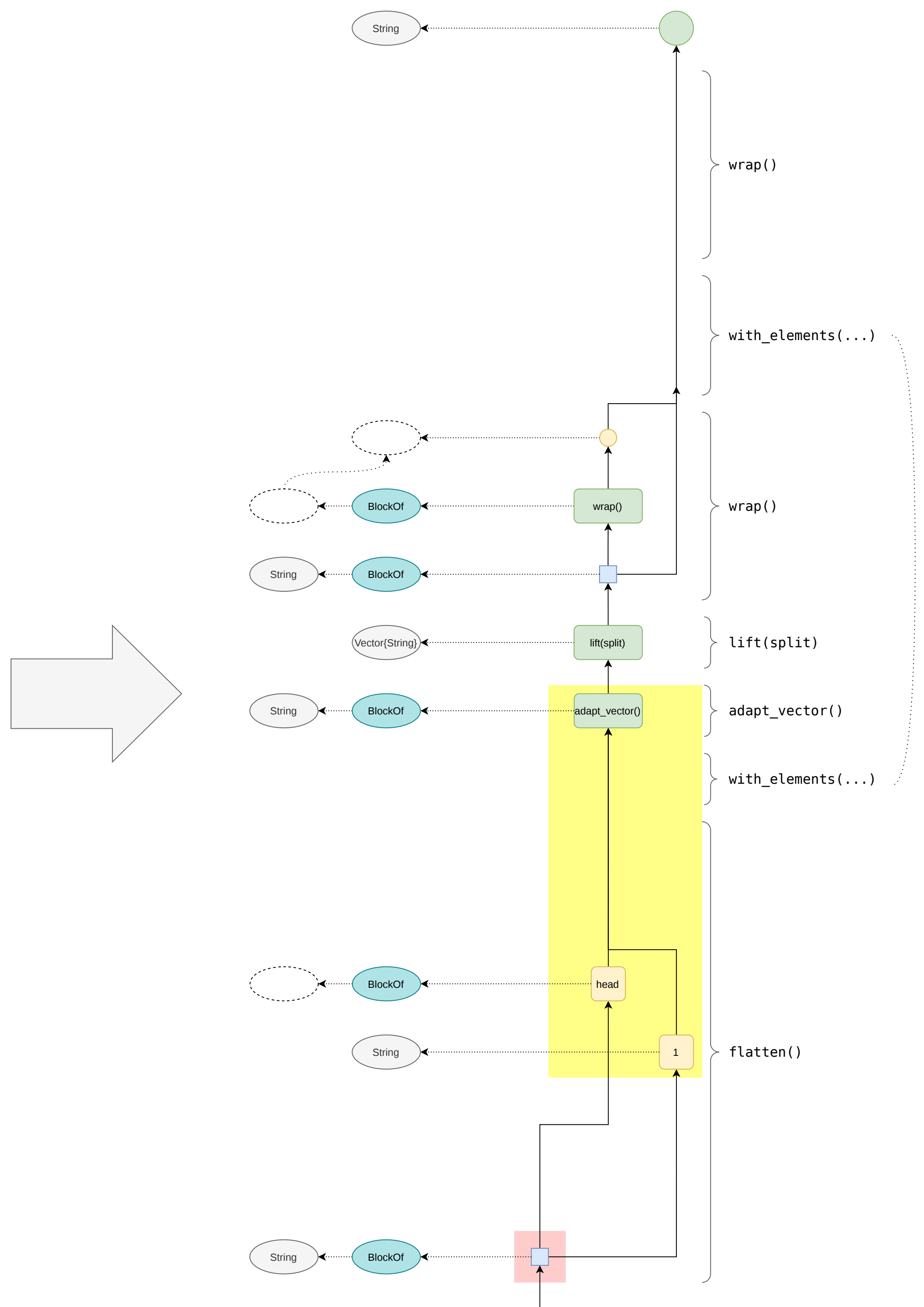
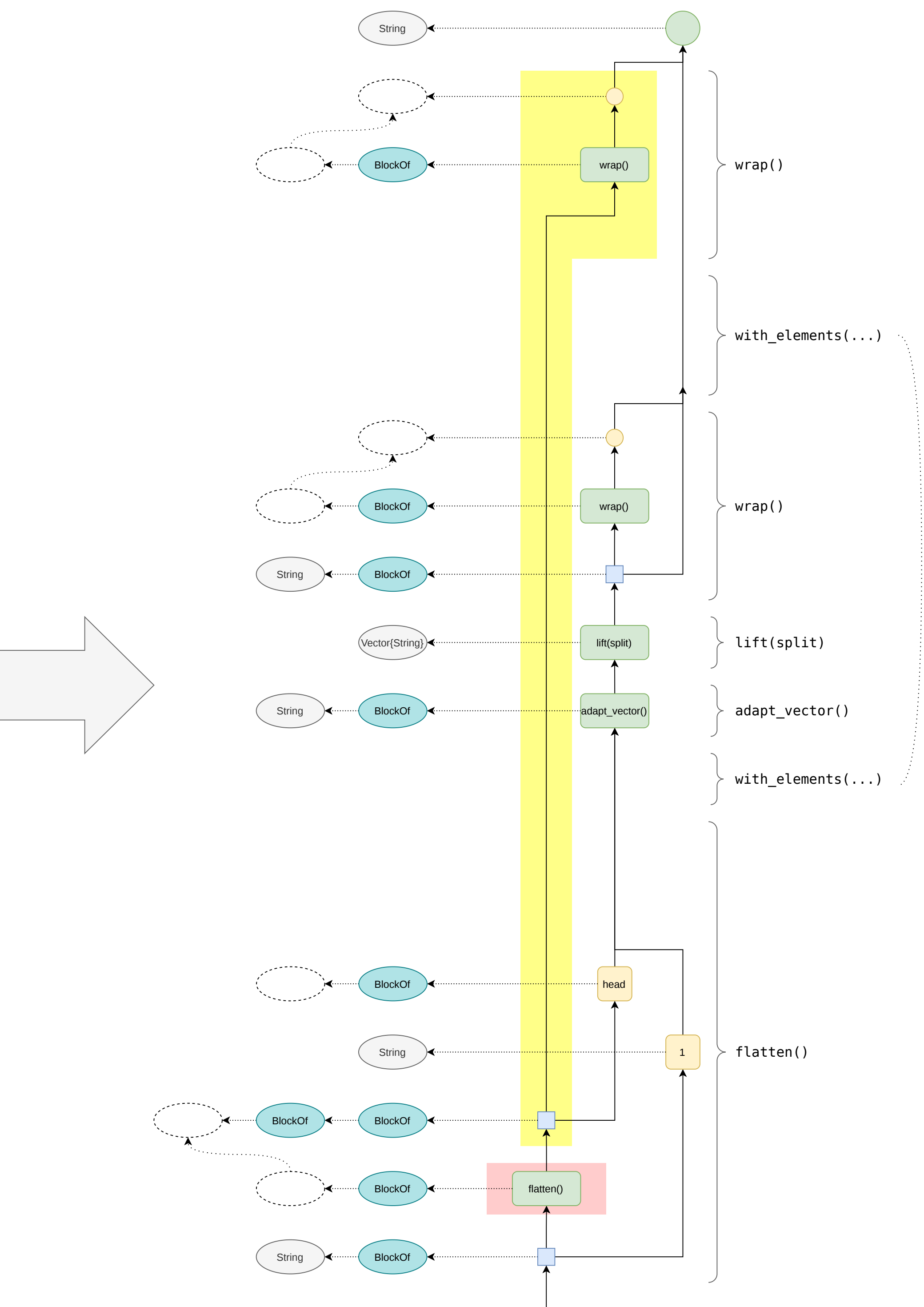


@query "Hello World" split(it)

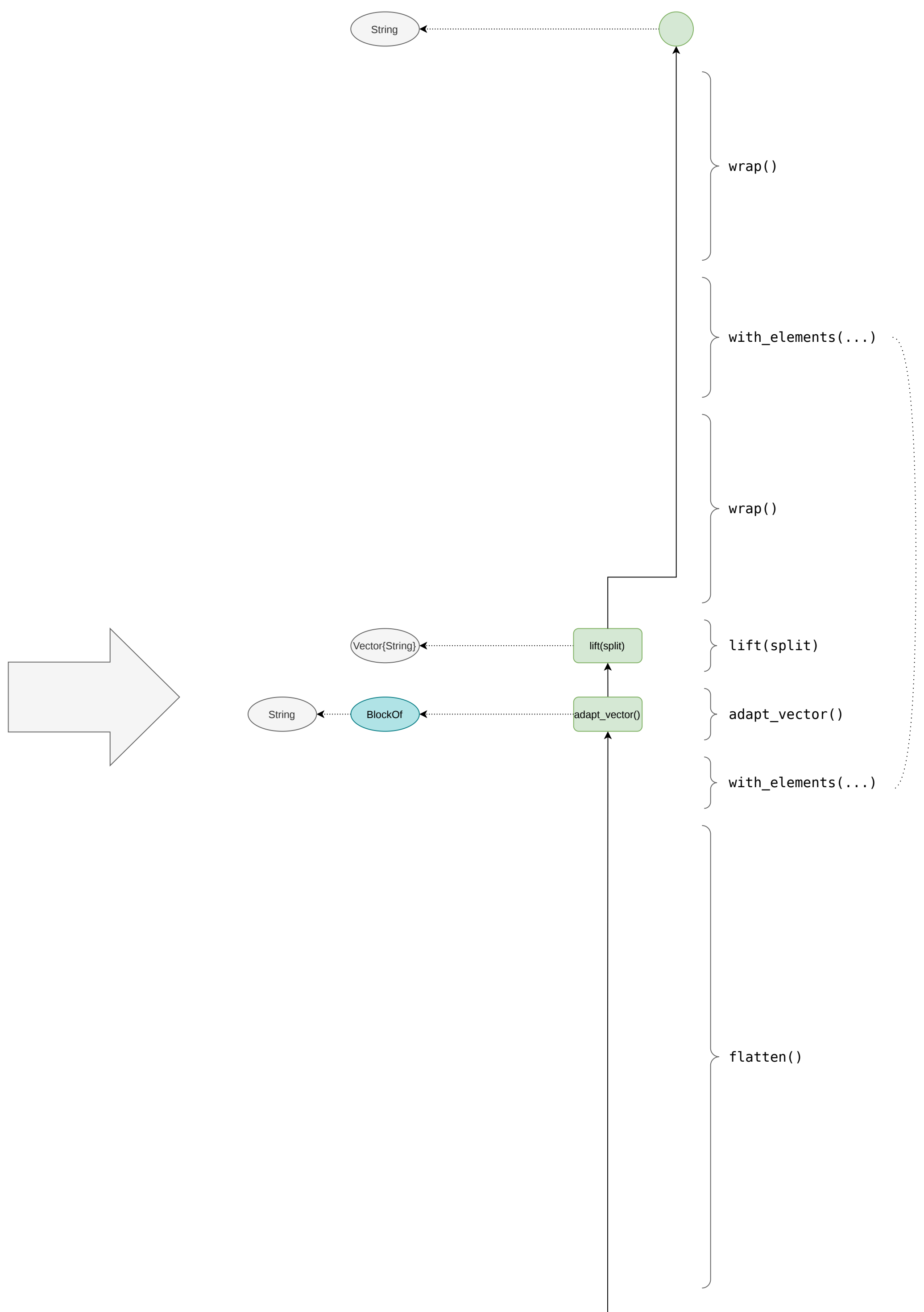
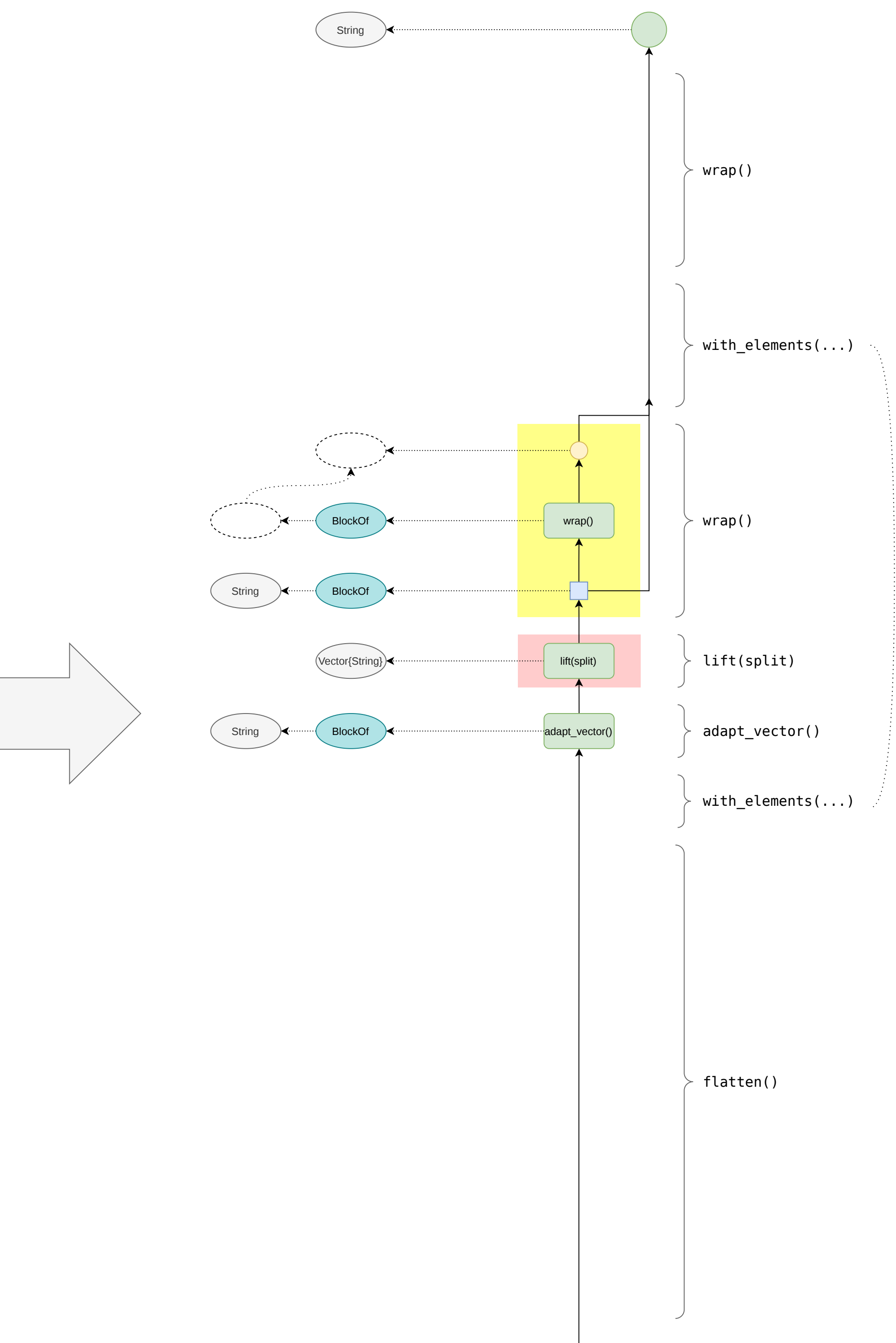
```
chain_of(  
  wrap(),  
  with_elements(  
    chain_of(  
      wrap(),  
      lift(split),  
      adapt_vector()),  
    flatten()  
  )  
)
```



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

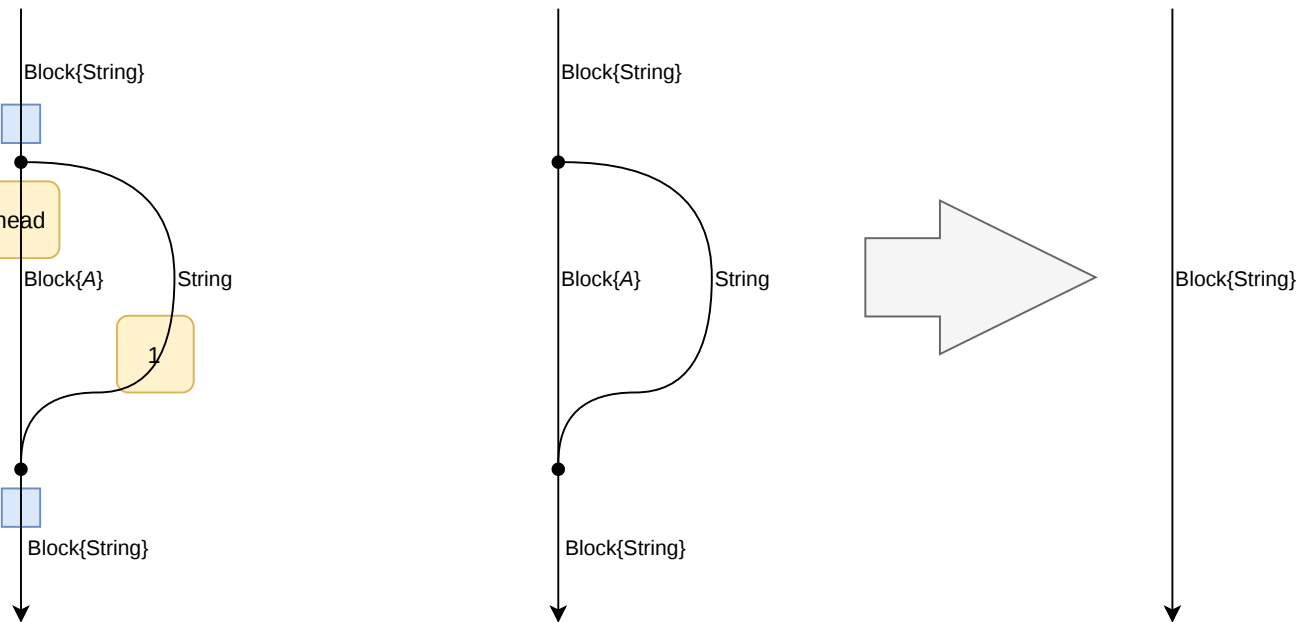






@query "Hello World" split(it)

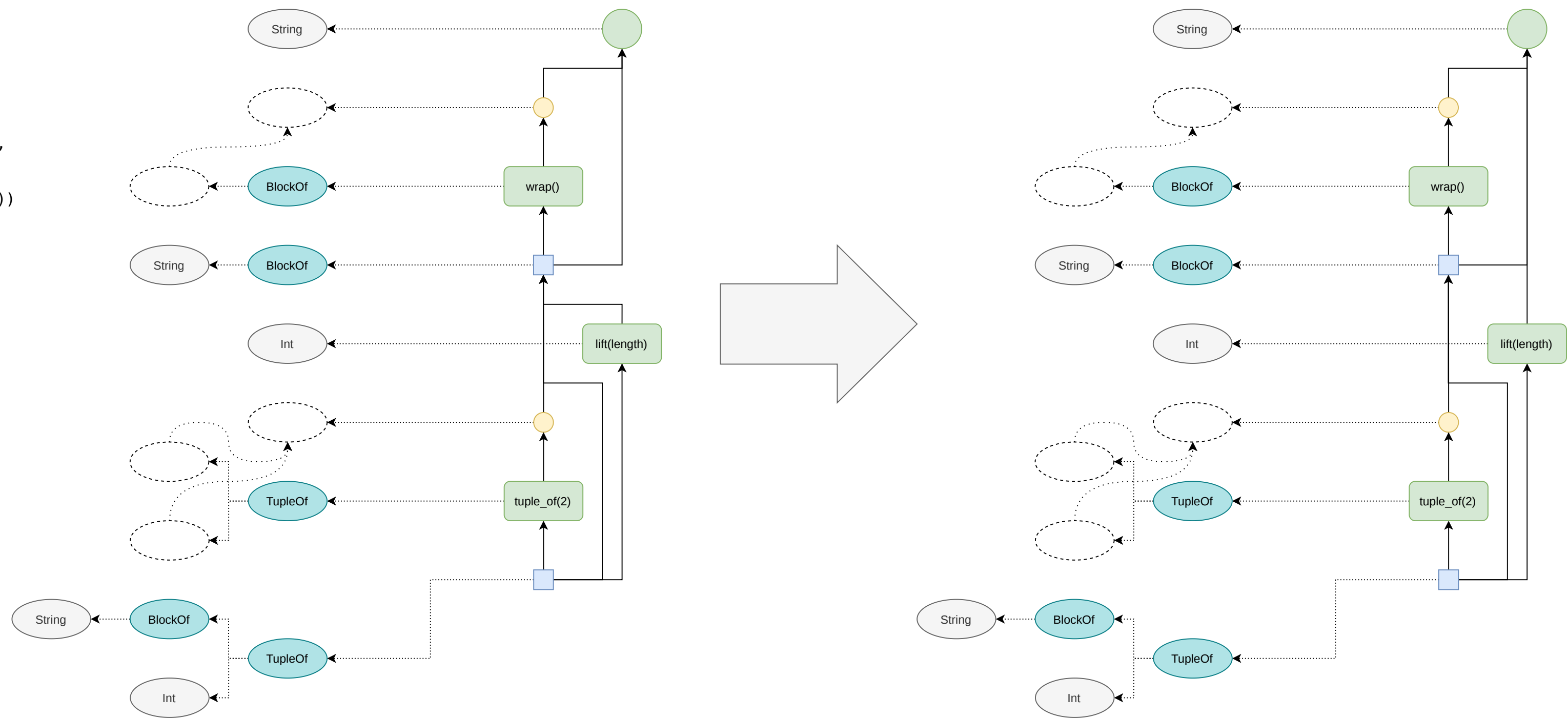
```
chain_of(
  wrap(),
  with_elements(
    chain_of(
      wrap(),
      lift(split),
      adapt_vector()),
    flatten())
```





```
tuple_of(
    wrap(),
    chain_of(wrap(), lift(length)))
```

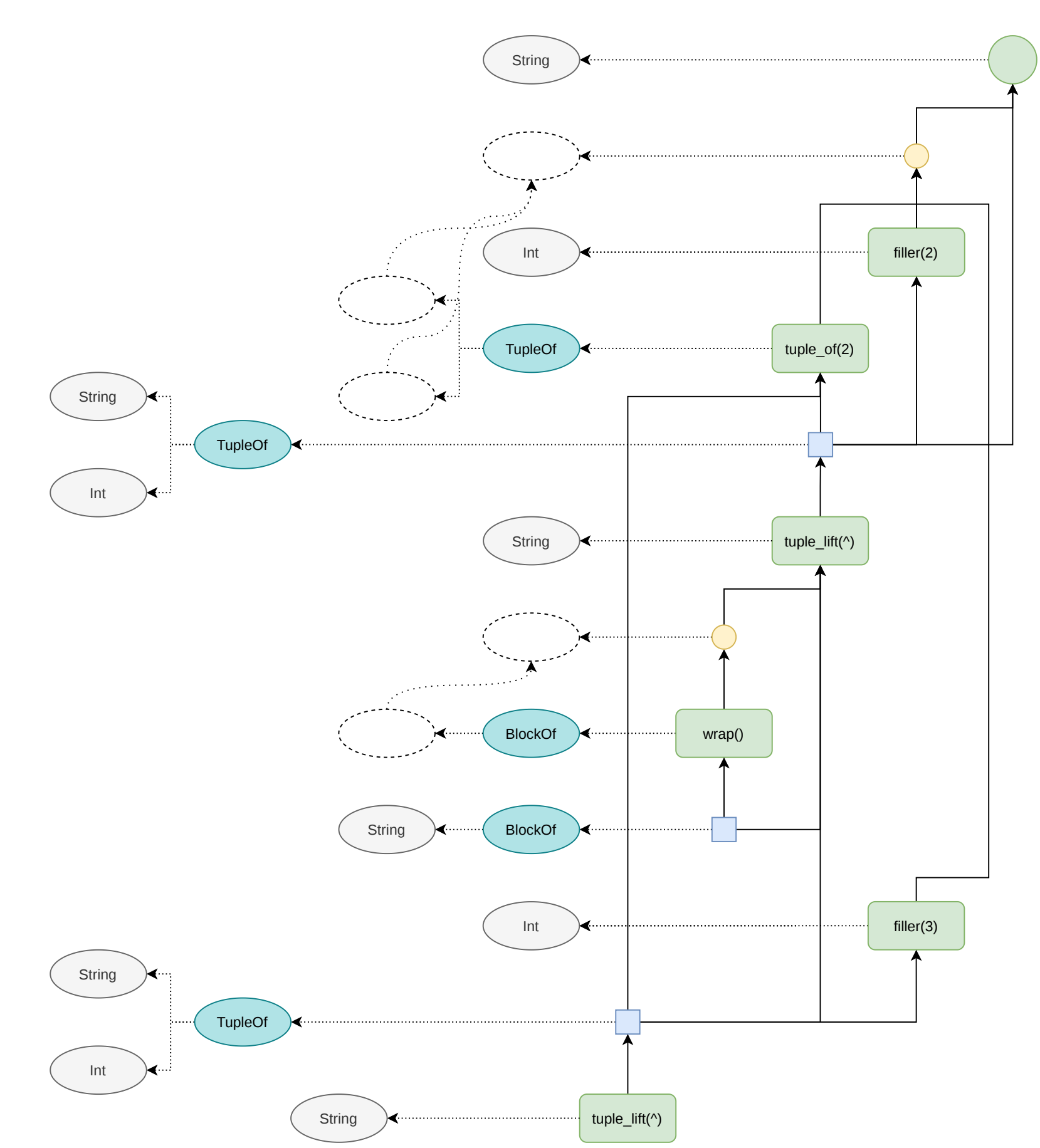
```
tuple_of(
    wrap(),
    lift(length))
```



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

`chain_of(f, tuple_of(g, h)) => tuple_of(chain_of(f, g), chain_of(f, h))`

`{it ^ 2, (it ^ 2) ^ 3}`



`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())
```

