



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").
- Step 1:** The value is converted to a string array: `String["Hello", "World"]`.
- Step 2:** The array is split into two rows based on the index:
 

1	1
2	3

 and
 

1	"Hello"
2	"World"
- Step 3:** The values are converted to uppercase:
 

1	1
2	3

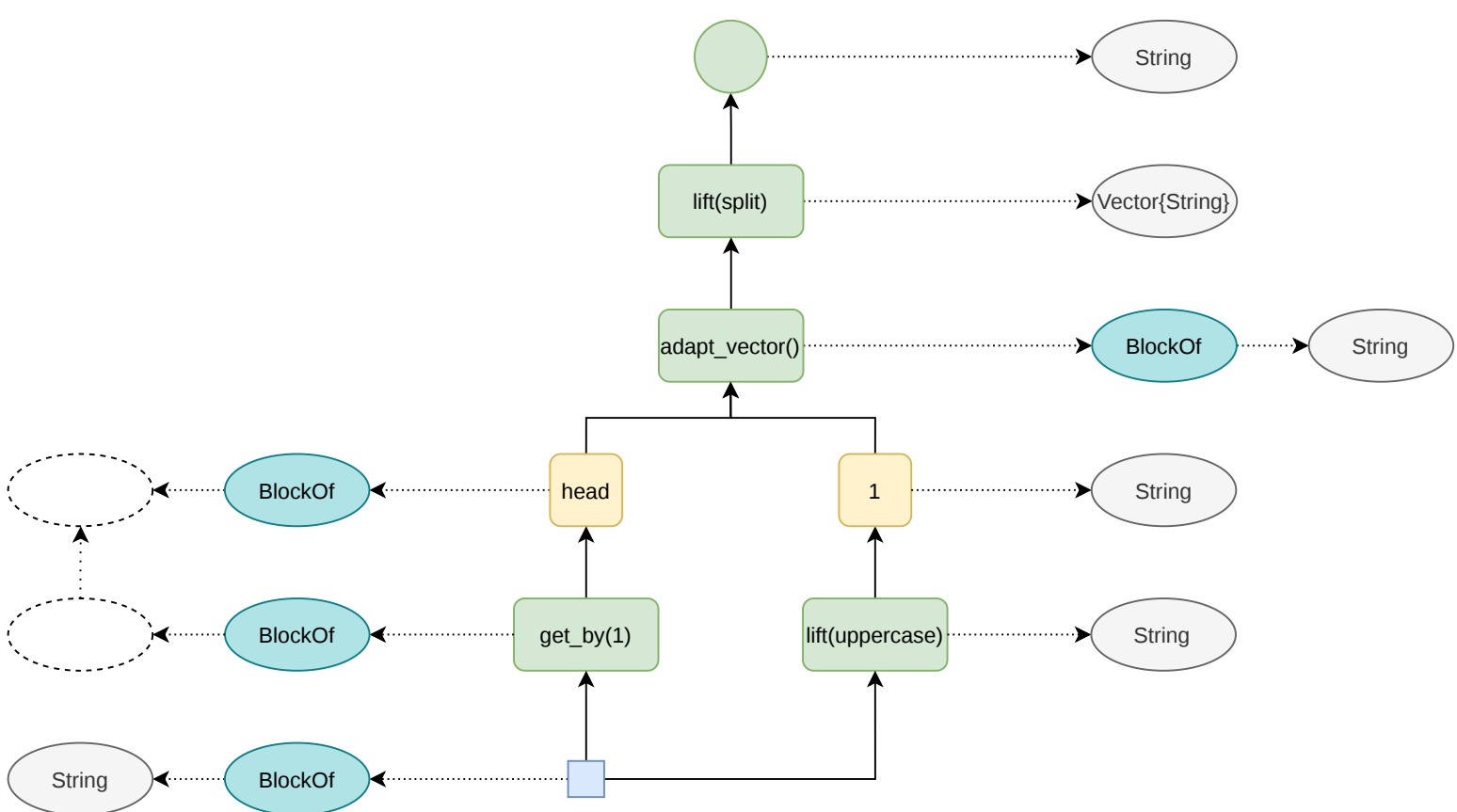
 and
 

1	"HELLO"
2	"WORLD"
- Step 4:** The values are converted to lowercase:
 

1	1
2	2

 and
 

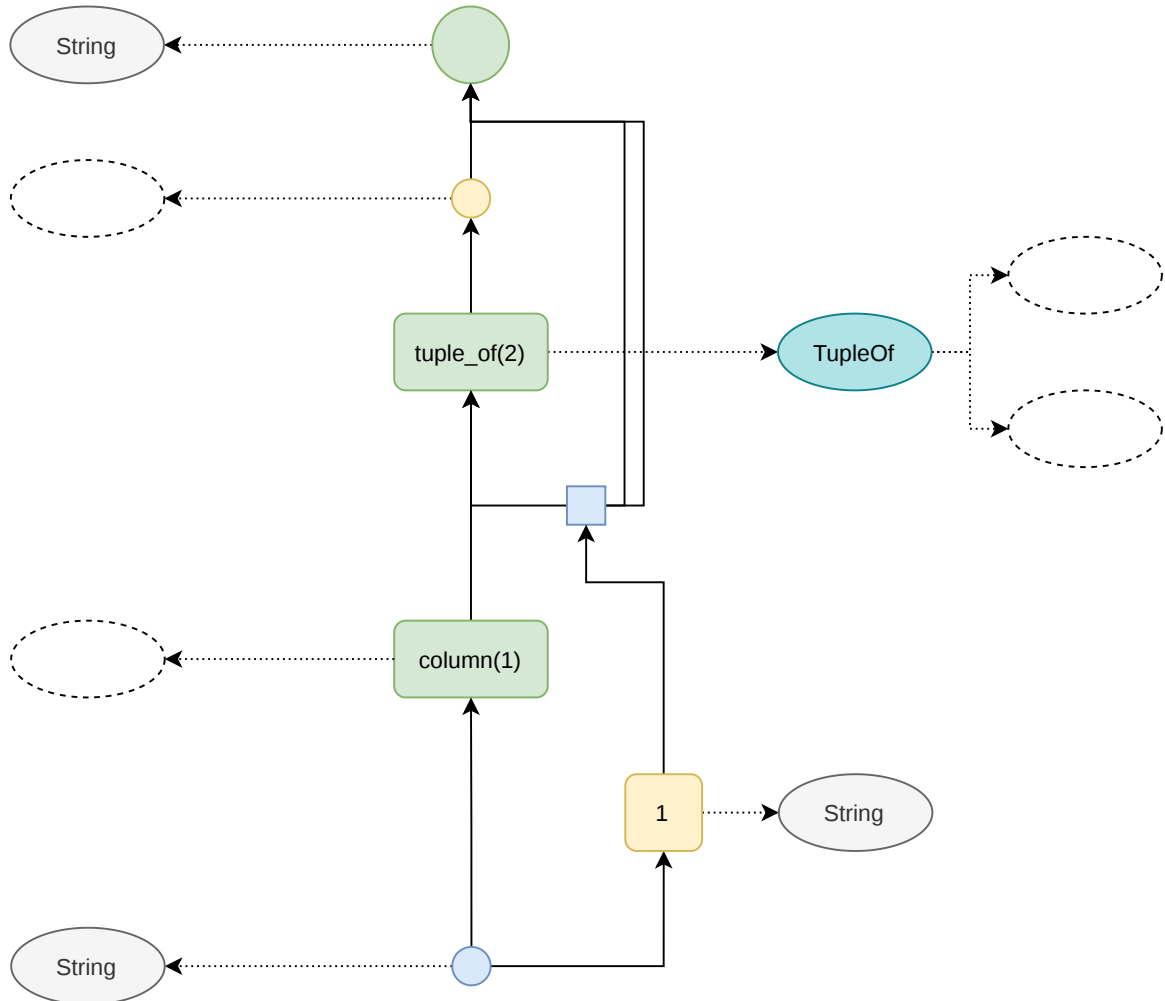
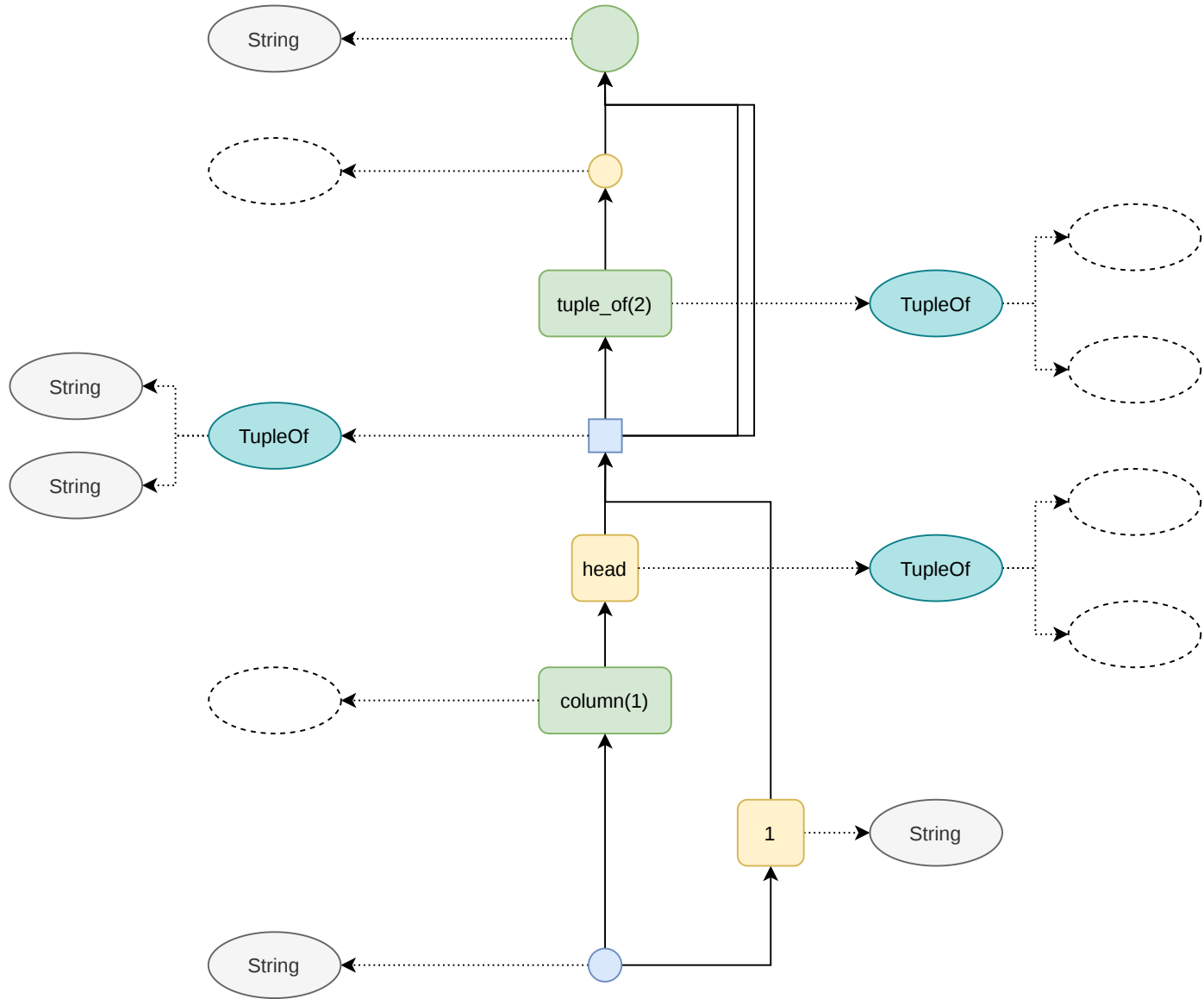
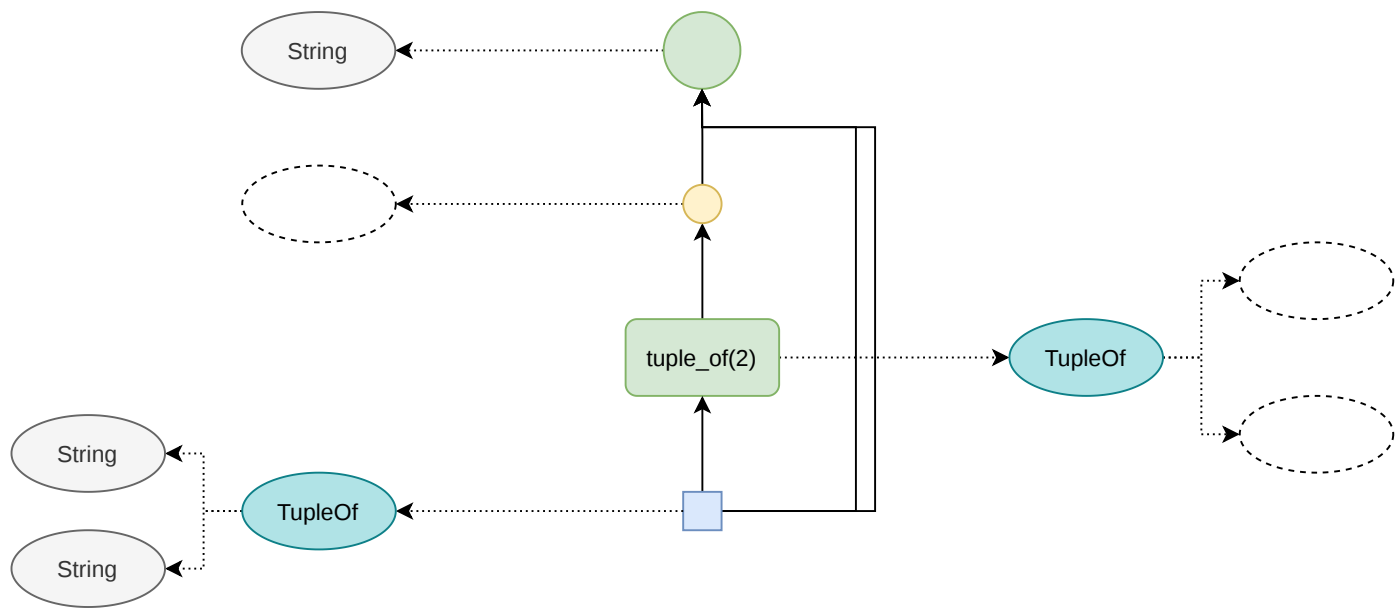
1	"HELLO"
2	"WORLD"
- Step 5:** The data is organized into a hierarchical tree structure:
  - Root node (empty box)
    - Left child: Table with index 1 (value 1) and index 2 (value 2).
    - Right child: Table with index 1 (value "HELLO") and index 2 (value "WORLD").
- Step 6:** The tree structure is further refined:
  - Root node (empty box)
    - Left child: Table with index 1 (value 1) and index 2 (value 2).
    - Right child: Table with index 1 (value 1) and index 2 (value 1).



wrap()



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



sieve\_by()

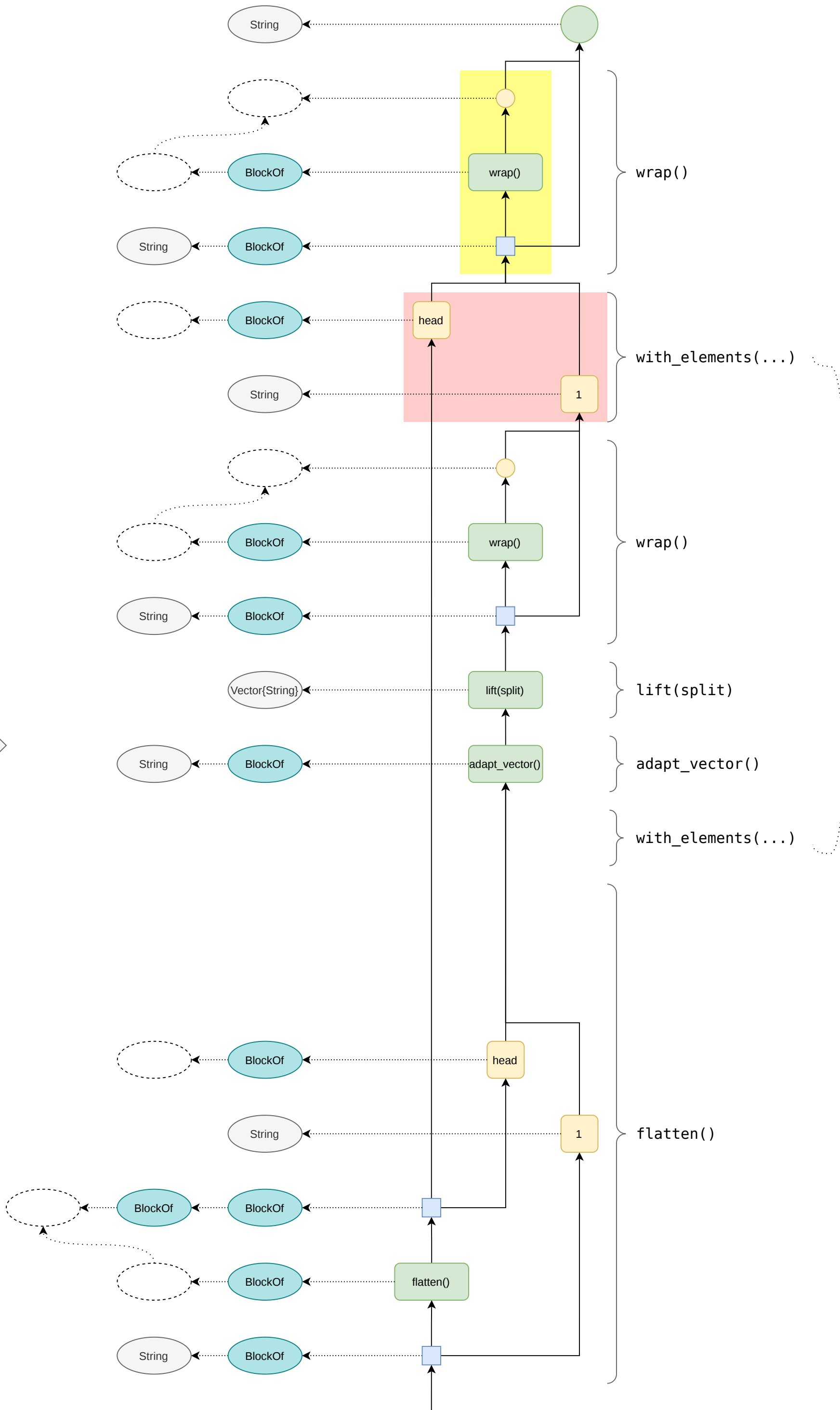
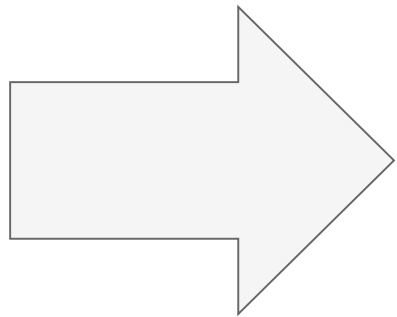
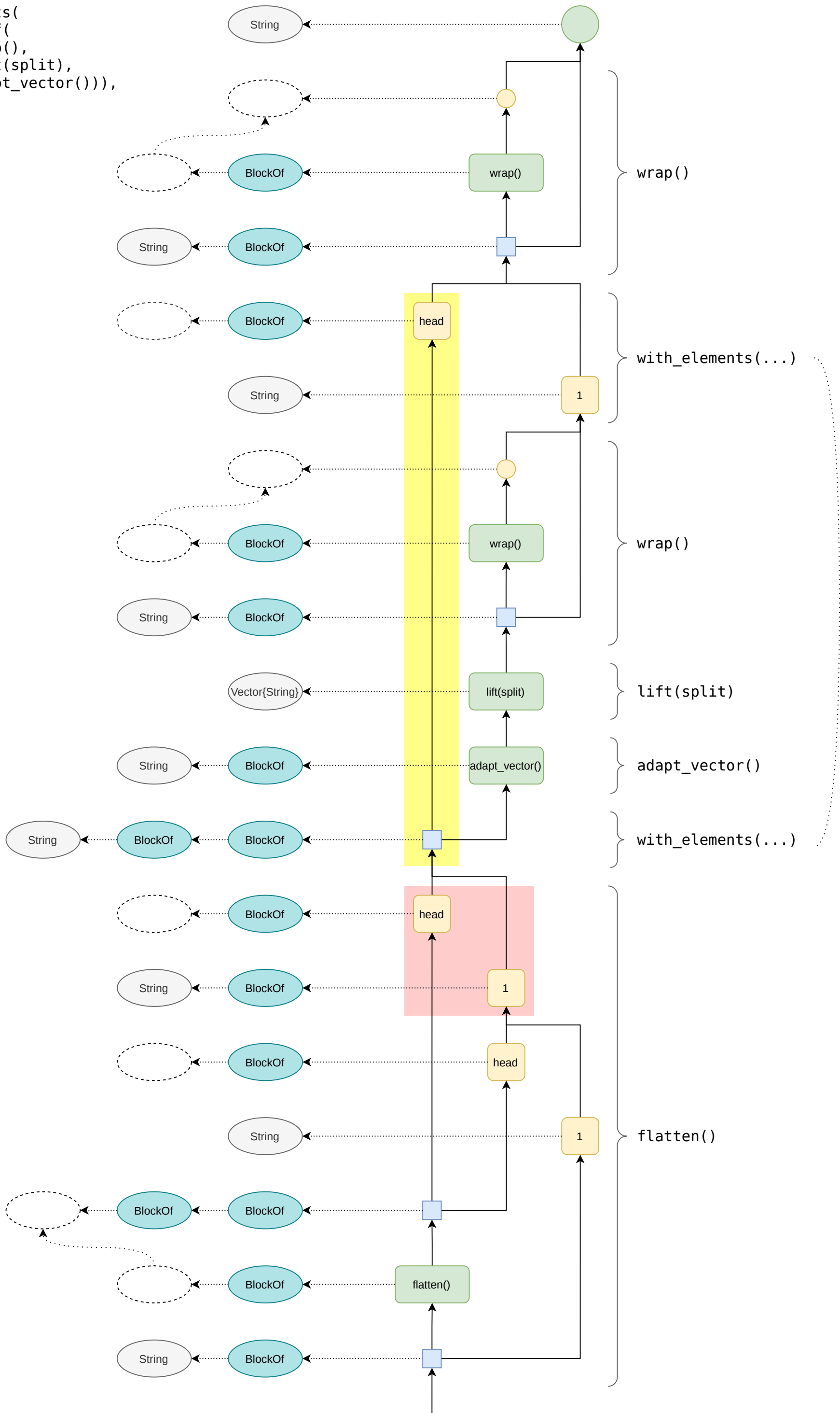


chain\_of(wrap(), block\_length())



@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())
```



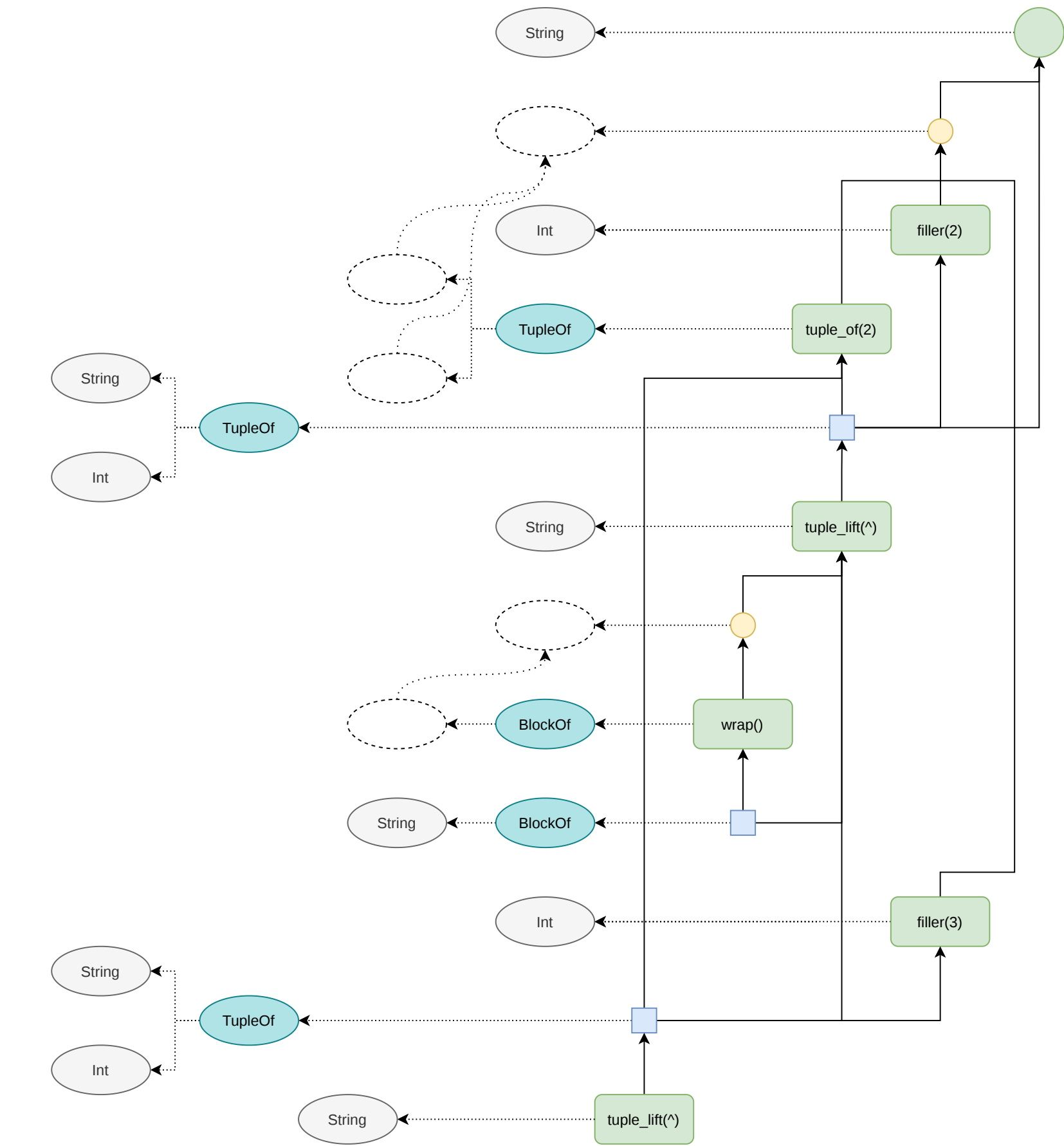




`untrace(n::NodeRef, guard::NodeRef)::Tuple{Pipeline,Vector{NodeRef}}`

`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())
```

