

Code Style Sheets

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We use our editors for more than writing code

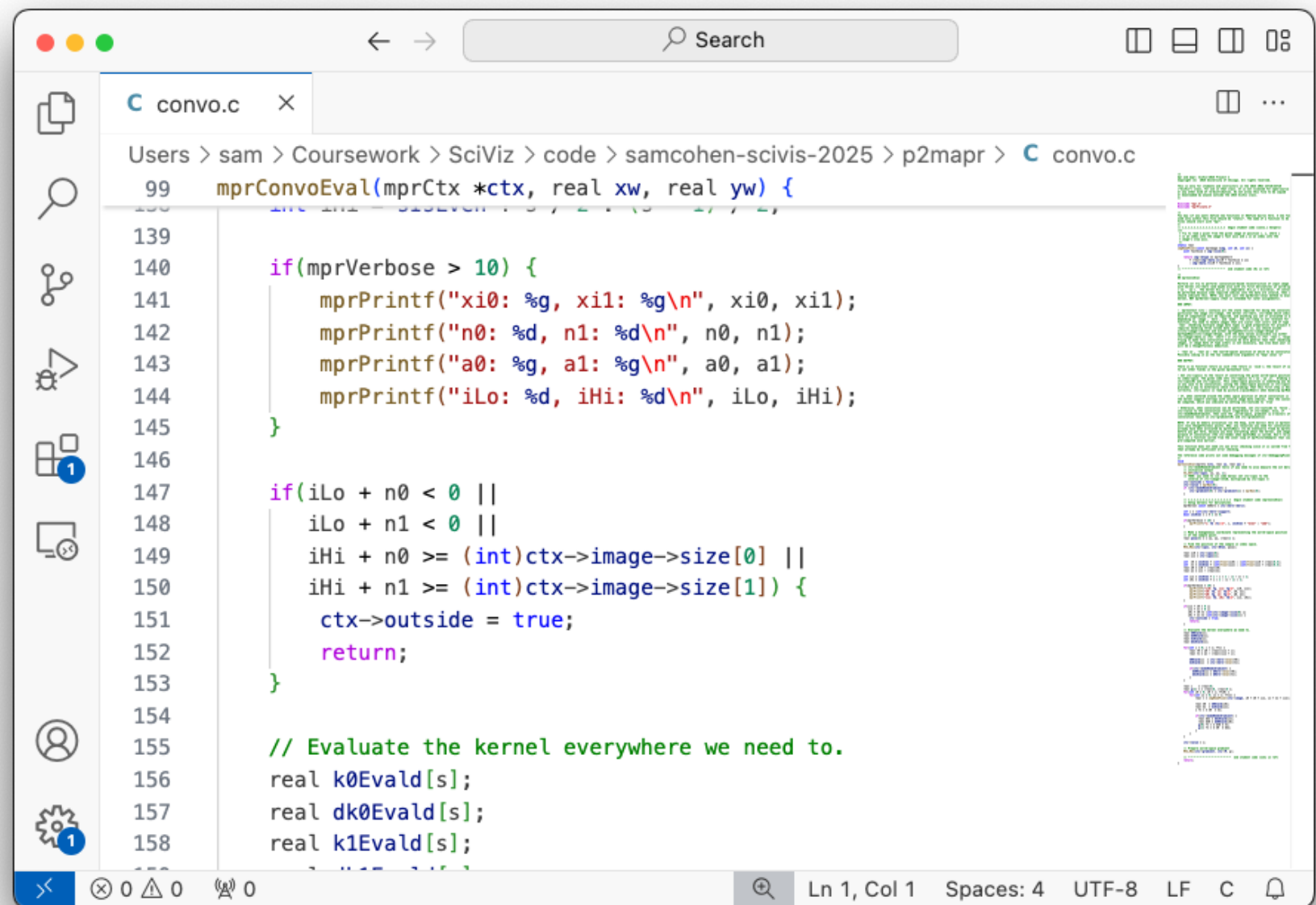
Writing

Debugging

Reading

Refactoring

Presenting



We use our editors for more than writing code

Could we benefit from domain-specific views?

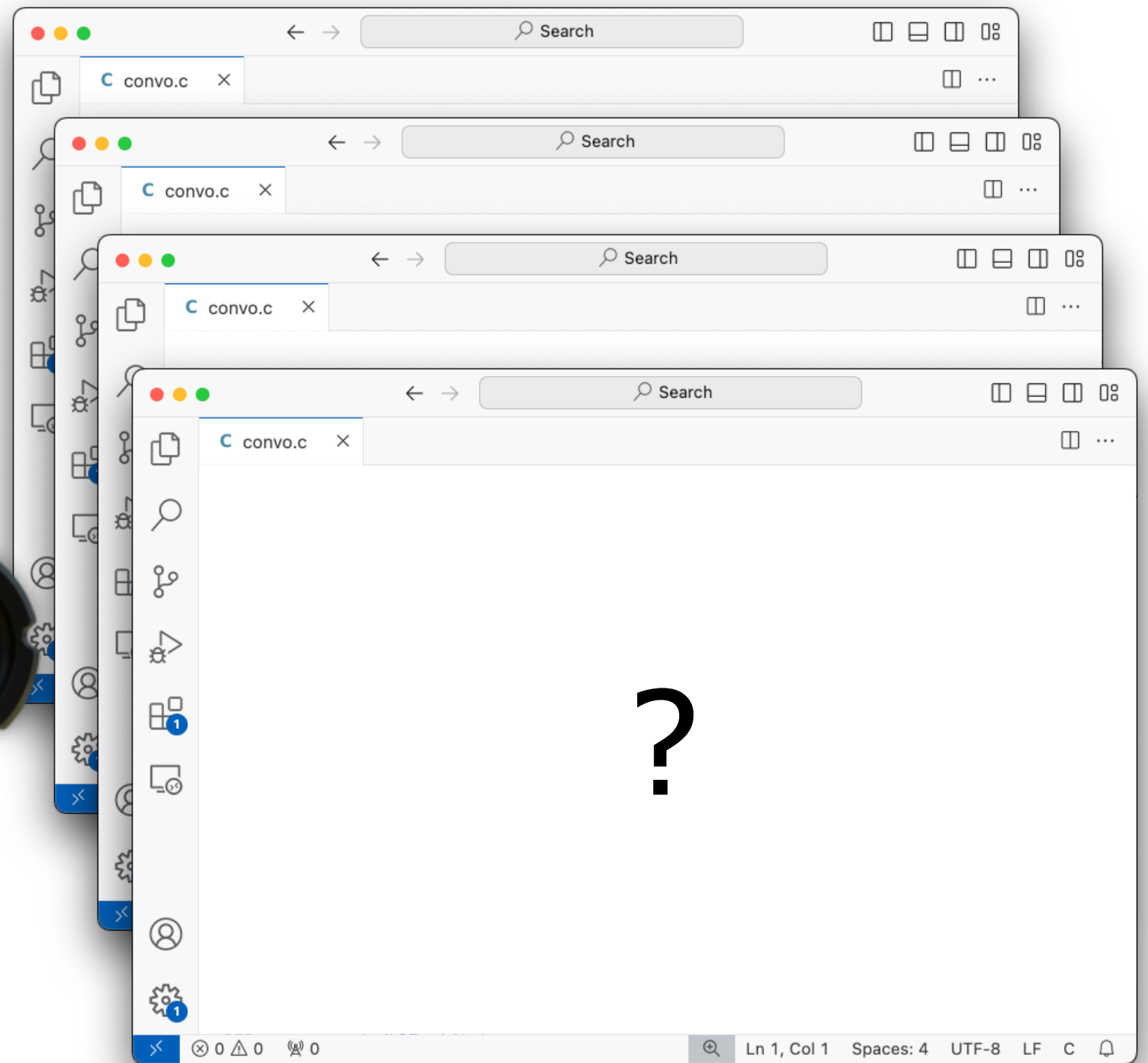
Writing

Debugging

Reading

Refactoring

Presenting



Idea: Code Style Sheets

Writing

Debugging

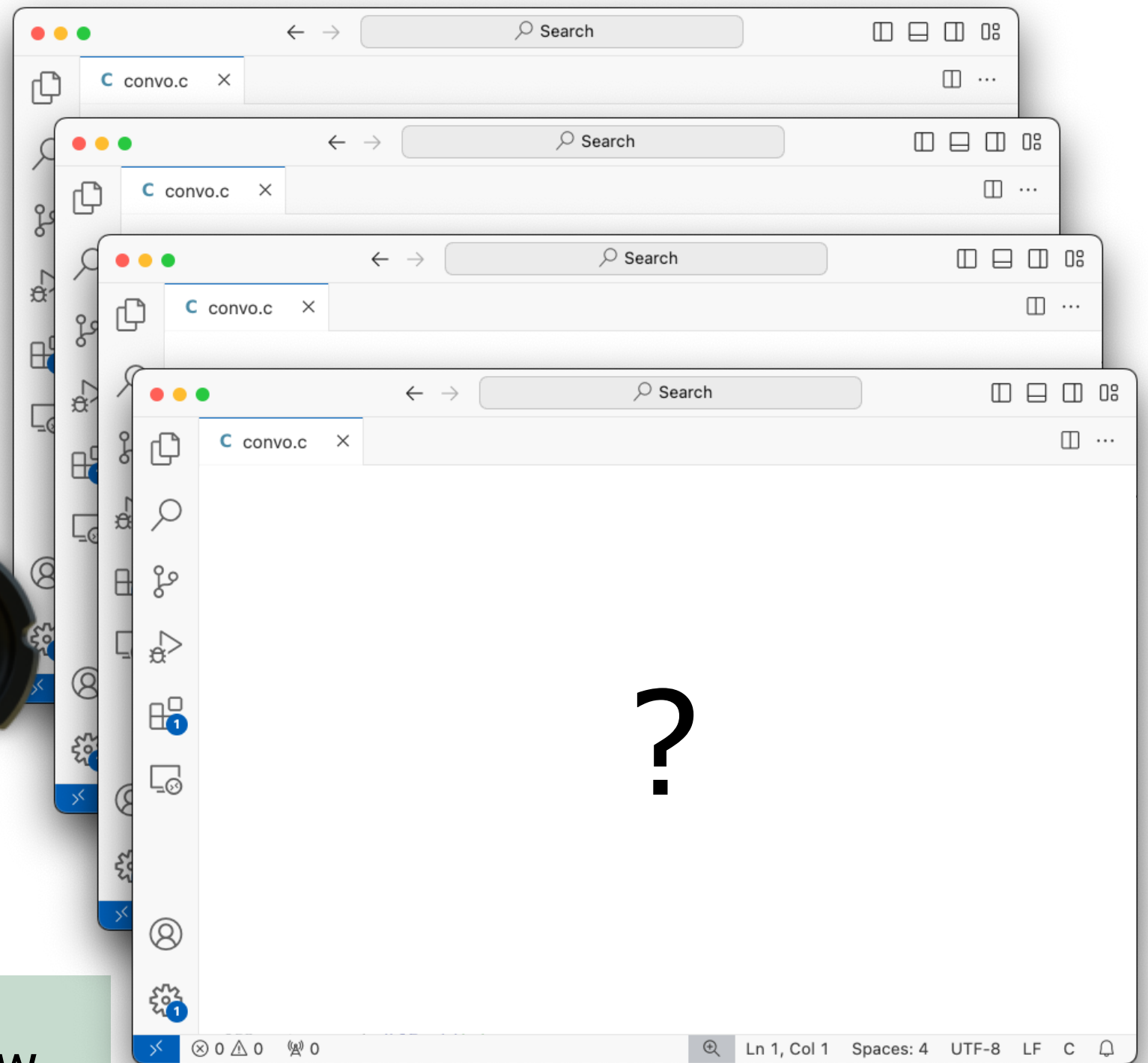
Reading

Refactoring

Presenting



Represent each view
by a **Style Sheet**



An Example

```
main =  
  getContents  
  >>= print
```

```
-- Anonymous Authors  
module Main where
```

```
-- Print a greeting
```

```
main =
```

```
  putStrLn "Hello MWPLS!"
```

```
<interactive>:14:3: error: [GHC-83865]
```

- Couldn't match expected type: (String -> Bool) -> a0 -> Bool
with actual type: IO String
- In the first argument of '(>>=)', namely 'getContents'
In the first argument of '(\$)', namely
'getContents >>= print . length . filter'
In the expression:
getContents >>= print . length . filter \$ isPrefixOf "--" . lines

```
<interactive>:15:9: error: [GHC-83865]
```

- Couldn't match type: IO ()
with: (String -> Bool) -> b
Expected: Int -> (String -> Bool) -> b
Actual: Int -> IO ()
- In the first argument of '(.)', namely 'print'
In the second argument of '(>>=)', namely 'print . length . filter'
In the first argument of '(\$)', namely
'getContents >>= print . length . filter'
- Relevant bindings include main :: b (bound at <interactive>:13:1)

```
<interactive>:18:9: error: [GHC-83865]
```

- Couldn't match type '[Char]' with 'Char'
Expected: String -> [Char]
Actual: String -> [String]
- In the second argument of '(', namely 'lines'

An Example

```
main =  
  getContents  
  >>= print  
    . length  
    . filter $ isPrefixOf "--"  
    . lines
```

Syntax Highlighting

Blocks



An Example

```
main =  
  getContents  
  >>= print  
    . length  
    . filter $ isPrefixOf "--"  
    . lines
```

Style Sheet

Syntax Highlighting

Blocks



An Example

```
main =  
  getContents  
  >>= print  
    . length  
    . filter $ isPrefixOf "--"  
    . lines
```

Style Sheet

```
(Op lhs op rhs) {  
  fill: #ffea75;  
}
```

Syntax Highlighting

Blocks



An Example

main =

getContents

>>=

print

· length
· filter

\$

isPrefixOf "--"
. lines

Style Sheet

```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
}
```

Syntax Highlighting

Blocks



An Example

main =

getContents

>>=

print

· length
· filter

\$

isPrefixOf "--"
. lines

Style Sheet

```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
  display: inline-block;  
}
```

Syntax Highlighting

Blocks



An Example

main =

getContents

>>=

print

· length
· filter

\$

isPrefixOf "--"
. lines

main =

getContents

>>= print

· length

· filter \$ isPrefixOf "--"

· lines

Style Sheet

**Text layout isn't
preserved!**

(Op Ints Op Ints) {

padding: 3px;

border: 1px solid #d1b547;

display: inline-block;

}

Syntax Highlighting

Blocks

An Example

main =

getContents

>>=

print

· length
· filter

\$

isPrefixOf "--"
. lines

Style Sheet

```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
  display: inline-block;  
}
```

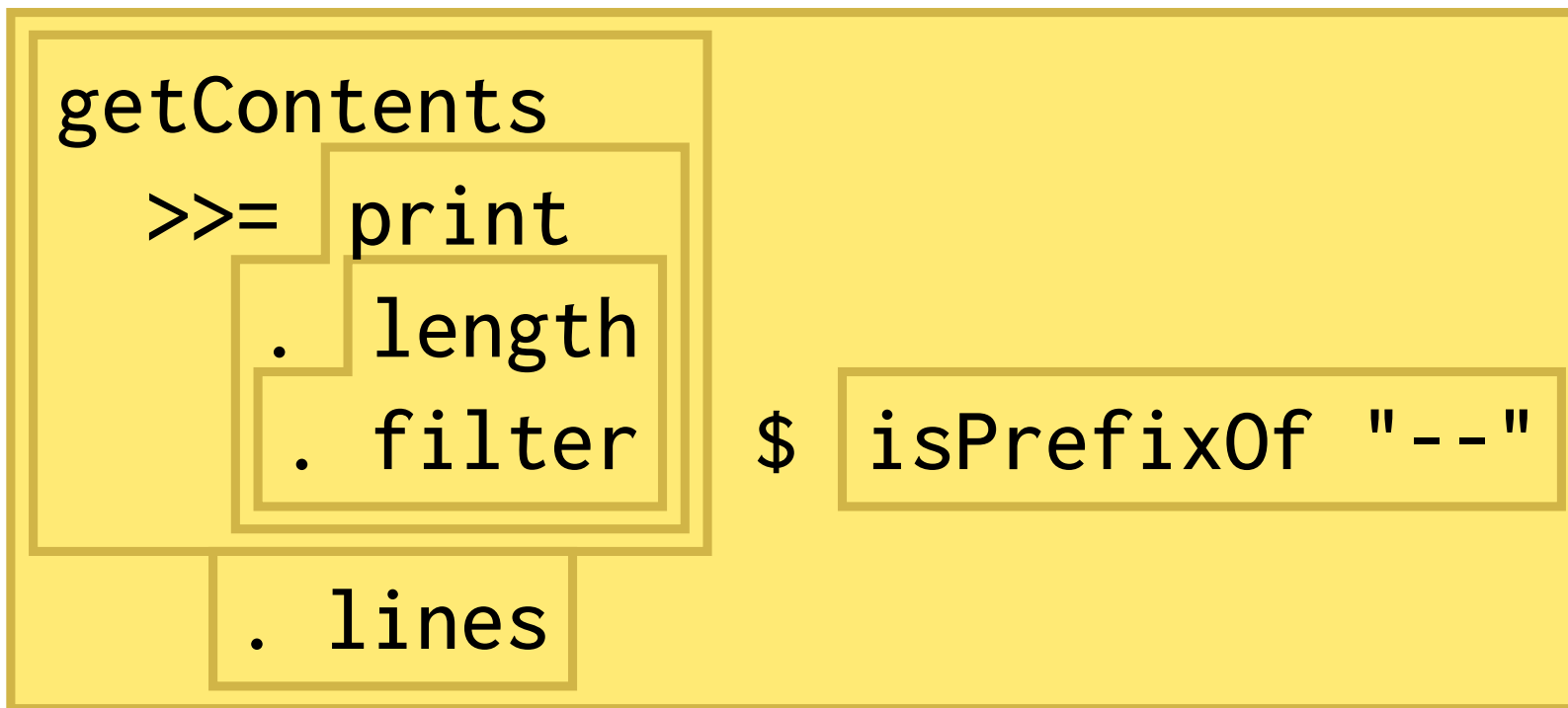
Syntax Highlighting

Blocks



An Example

main =



Style Sheet

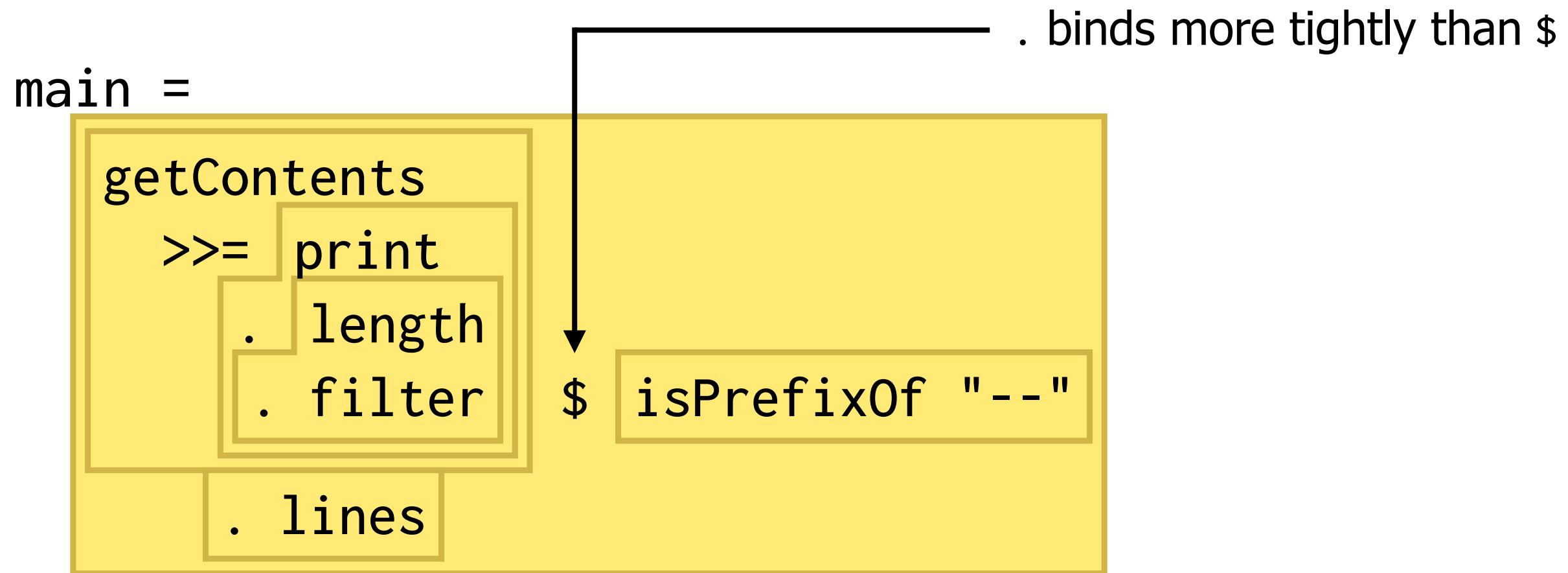
```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
  display: ragged-block;  
}
```

Syntax Highlighting

Blocks



An Example



Style Sheet

```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
  display: ragged-block;  
}
```

Syntax Highlighting

Blocks



An Example

main =

getContents

>>= print

. length

. filter (isPrefixOf "--")

. lines

Style Sheet

```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
  display: ragged-block;  
}
```

Syntax Highlighting

Blocks



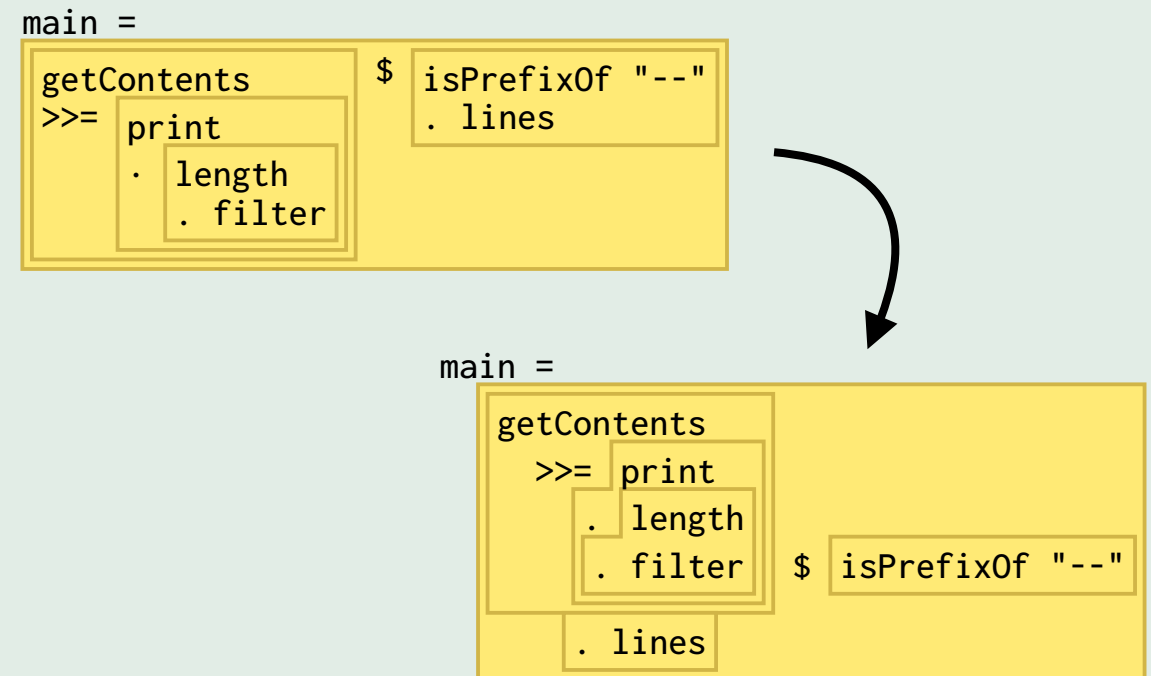
Existing Work

Styling

```
(Op lhs op rhs) {  
  fill: #ffea75;  
  padding: 3;  
  border: 1px solid #d1b547;  
}
```

Code Style Sheets: CSS For Code,
OOPSLA '25

Layout



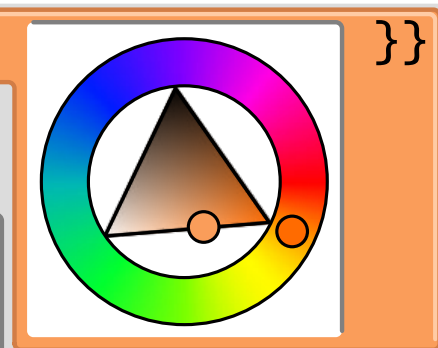
Ragged Blocks: Rendering
Structured Text with Style, UIST '25

Existing Work: Applications

```
pairs =  
[ (i, j)  
  for i in range(0, 10)  
  for j in range(0, 10)  
  if i != j ]
```

Structure Editors

```
function ErrMsgComponent(props) {  
  return (  
    <p style={{ color:  
      {props.msg}  
    }}>  
  );  
}
```



Widgets-in-text

```
def fib(i):  
  def fibgo(i, n1, n2):  
    if i <= 1:  
      return 1  
    else:  
      return fibgo(i - 1, n2, n1)  
  return go(i, 1, 1)
```

Visualizations

These H-gadgets are inserted between each fragment on a line (as opposed to V-gadgets, which are inserted between lines). Once the h-gadgets have been inserted the length of each line can be found by summing the width of each fragment.

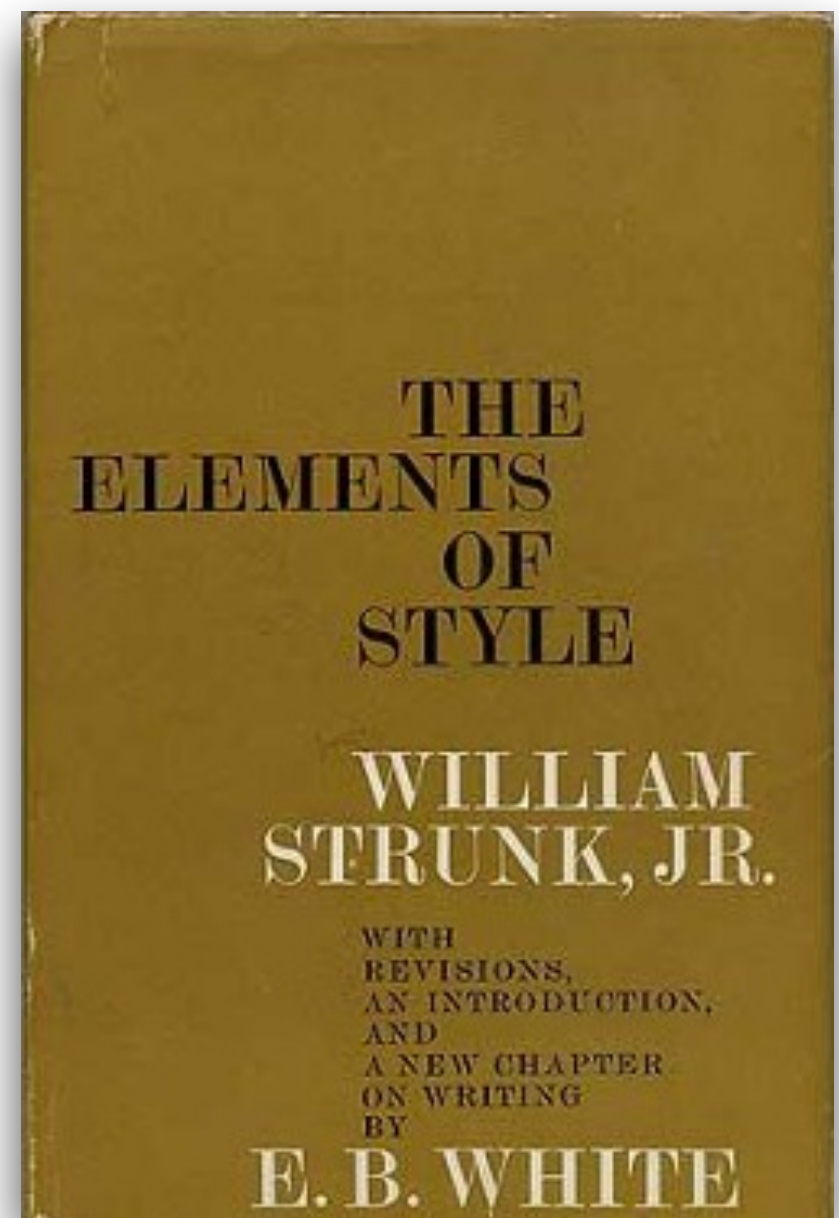
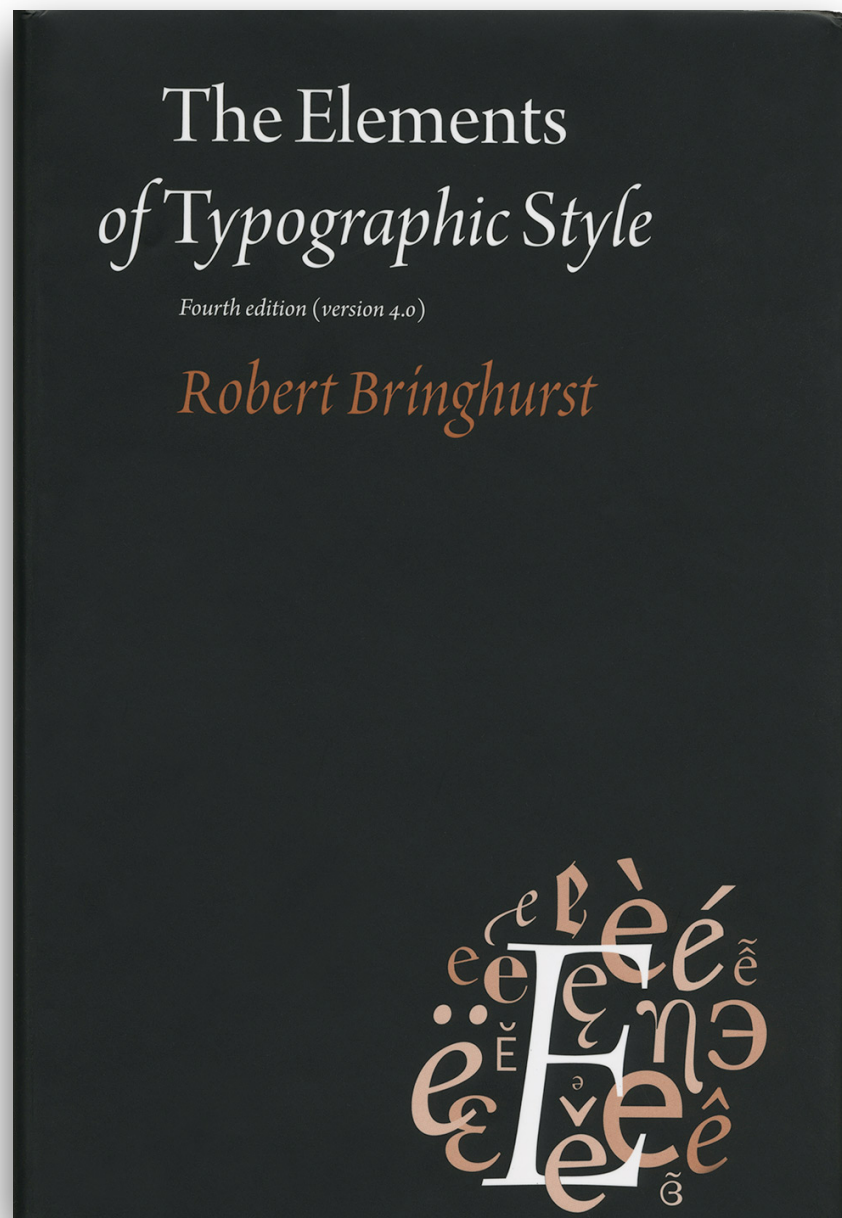
After width resolution, it's time to resolve the height of each line.

So called height resolution is accomplished using V-gadgets, which are analogous to H-gadgets, but exist between lines as opposed to between fragments.

These V-gadgets are inserted based on the horizontal positions of the

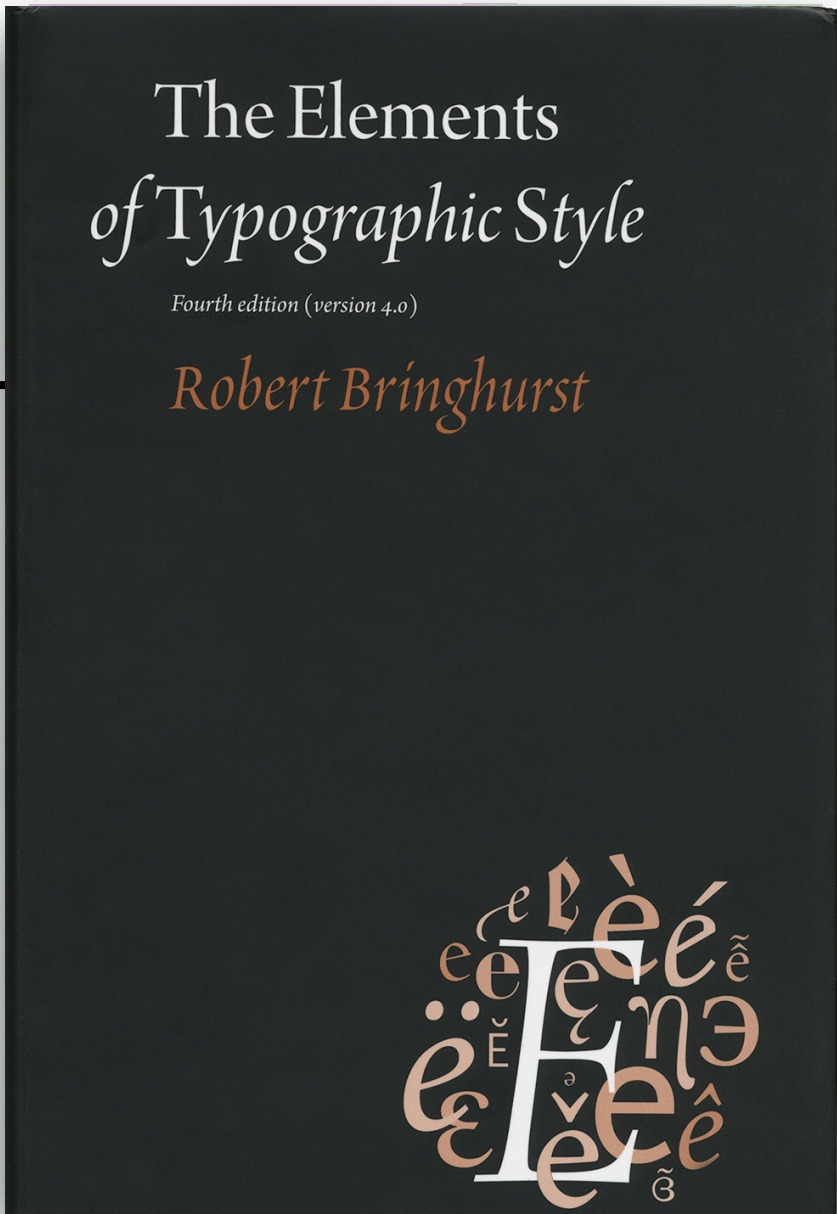
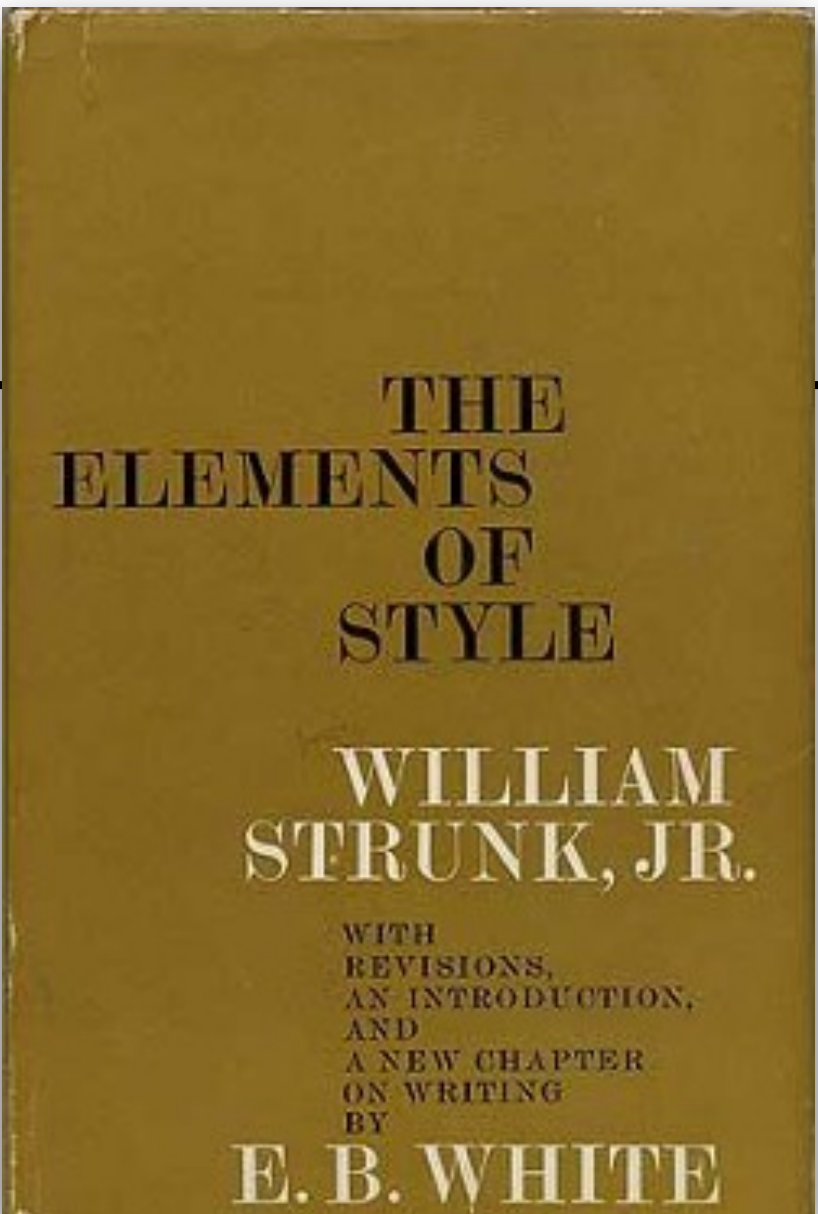
Natural Language!

Future Work: Meanings of Style



Future Work: Meanings of Style

Elements of...

Interaction Type	Typographical Code Style	Grammatical Code Style
Static	 The cover of 'The Elements of Typographic Style' by Robert Brinaghurst. It is a dark grey/black book with white text. The title is in a serif font, with 'of' in italics. Below the title is 'Fourth edition (version 4.0)' and the author's name 'Robert Brinaghurst' in a smaller, orange-brown font. At the bottom, there is a large, stylized graphic of the letter 'H' composed of various typographic characters and ligatures in white and orange-brown.	 The cover of 'The Elements of Style' by William Strunk, Jr. It is a mustard yellow book with black text. The title 'THE ELEMENTS OF STYLE' is in a large, bold, serif font. Below it is the author's name 'WILLIAM STRUNK, JR.' in a smaller, bold, serif font. At the bottom, it says 'WITH REVISIONS, AN INTRODUCTION, AND A NEW CHAPTER ON WRITING BY E. B. WHITE' in a small, bold, serif font.
Dynamic		

Code Style Sheets in the Editor

Static

Dynamic

Typographical

Grammatical



Code Style Style Sheets

Static

Typographical

Dynamic

Grammatical

```
main =  
  getContents  
  >>= print  
    . length  
    . filter (isPrefixOf "--")  
    . lines
```

Style Sheet

```
(Op _ op1 _) (Op _ op2 _) {  
  direction op1 = direction op2  
}
```

Code Style Style Sheets

Static

Typographical

Dynamic

Grammatical

```
main =  
  getContents  
  >>= print  
    . length  
    . filter (isPrefixOf "--")  
    . lines
```

Style Sheet

```
(Op _ op1 _) (Op _ op2 _) {  
  direction op1 = direction op2  
}
```

Syntax Constraint

Code Style Style Sheets

Static

Typographical

Dynamic

Grammatical

```
main =  
  getContents  
  >>= print  
    . length  
    . filter (isPrefixOf "--")  
    . lines
```

```
main =  
  getContents  
  >>= lines  
  >>> filter (isPrefixOf "--")  
  >>> length  
  >>> print
```

Style Sheet

```
(Op _ op1 _) (Op _ op2 _) {  
  direction op1 = direction op2  
}
```

Syntax Constraint

Thank You!

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