Programming Fundamentals with JavaScript

For Loops

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Next Piece: Repetition (for Each Pixel)

1. Start with the foreground image you want (fgImage)
2. And with the background image you want (bgImage)
3. Make a blank image of the same size (output)
4. For each pixel (currentPixel) in fgImage
    1. Look at currentPixel and if it is green,
        - Look at same position in bgImage
        - And set output's corresponding pixel to bgImage's pixel
    2. Otherwise: set output's corresponding pixel

Next Piece: Repetition (for Each Pixel)

Repeat steps for each pixel

1. Start with the foreground image you want (fgImage)
2. And with the background image you want (bgImage)
3. Make a blank image of the same size (output)
4. **For each pixel (currentPixel) in fgImage**
    1. Look at currentPixel and if it is green,
        - Look at same position in bgImage
        - And set output's corresponding pixel to bgImage's pixel
    2. Otherwise: set output's corresponding pixel

Repeating Steps: For Loops

```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

- Repetition: for loops
    - Assume `img` previously declared/initialized

Repeating Steps: For Loops

```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

Keyword *for*

- Break down syntax

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Repeating Steps: For Loops

```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

In parentheses: information about repetition

- Break down syntax

Repeating Steps: For Loops

```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

Variable to refer to **current** item
(looks like variable declaration)

- Break down syntax

Repeating Steps: For Loops

```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

Keyword *of*

- Break down syntax

Repeating Steps: For Loops

```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

What to repeat over
For images: `img.values()` gives all pixels

- Break down syntax

Repeating Steps: For Loops

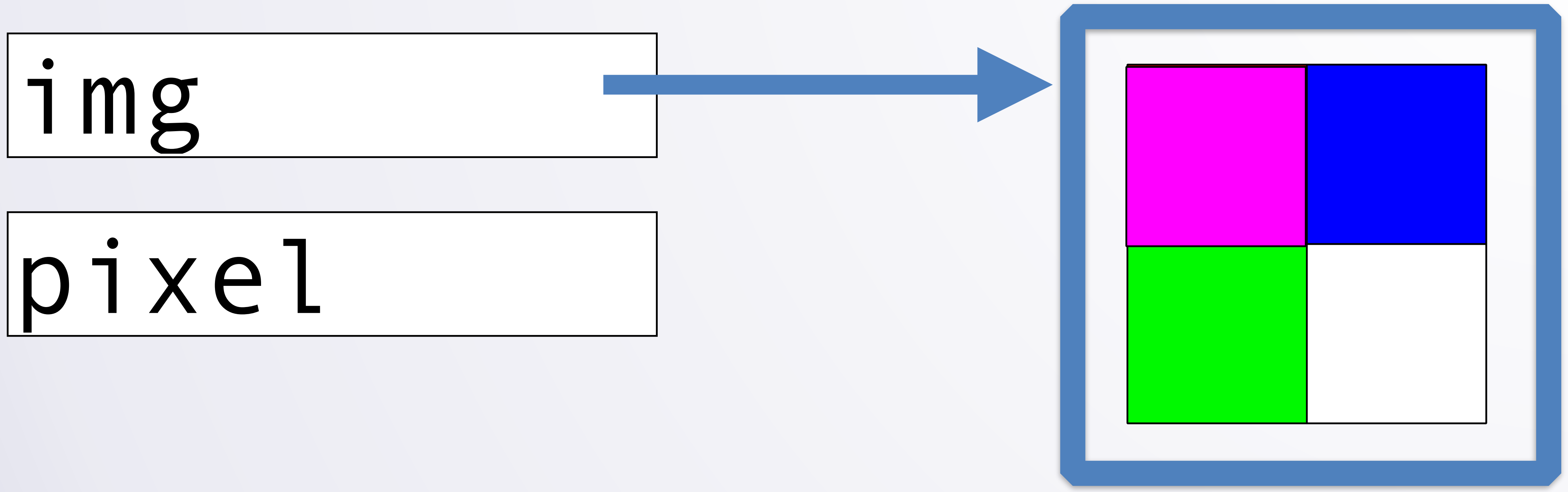
```
for ( var pixel of img.values() ) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

Body of the loop: what statements to repeat
In curly braces

- Break down syntax

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

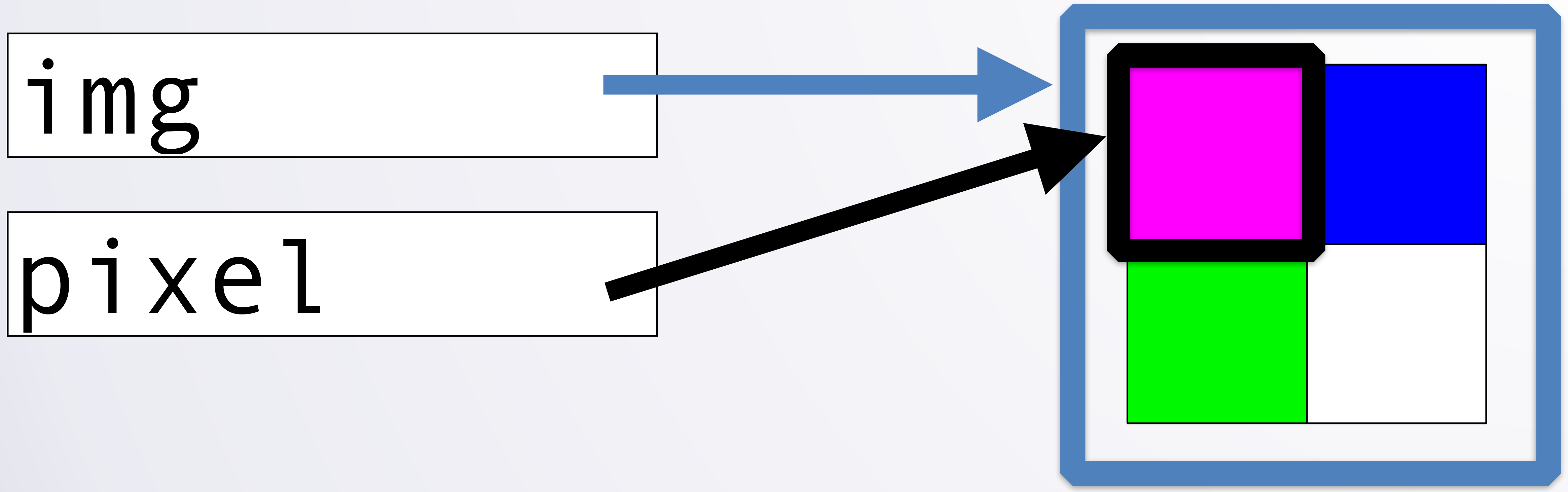


img

pixel

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

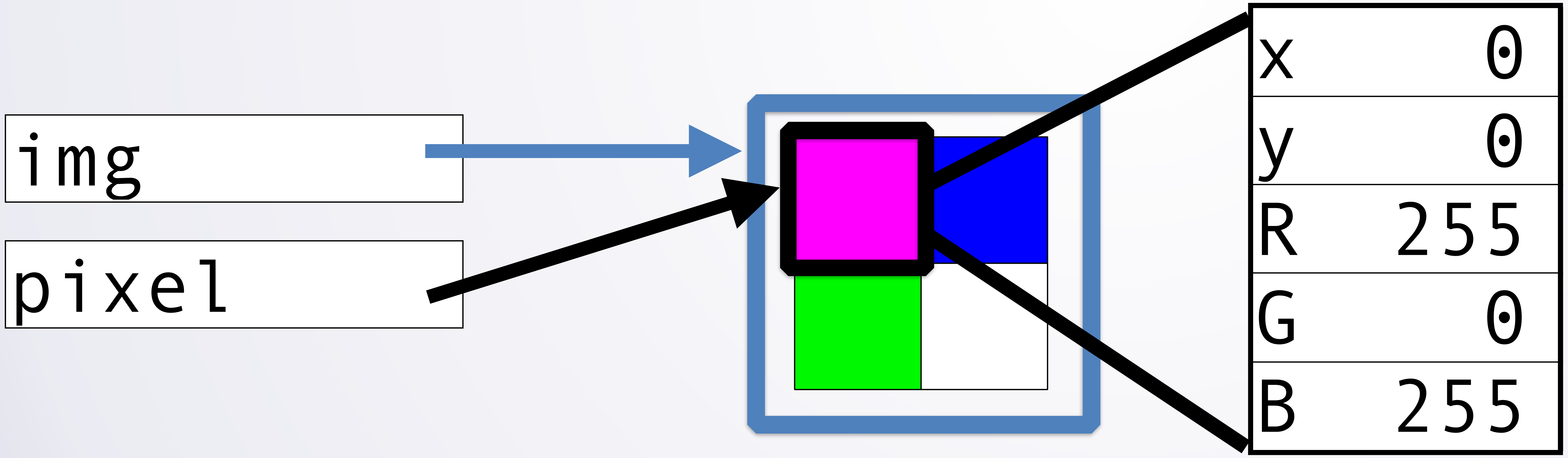


img

pixel

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```



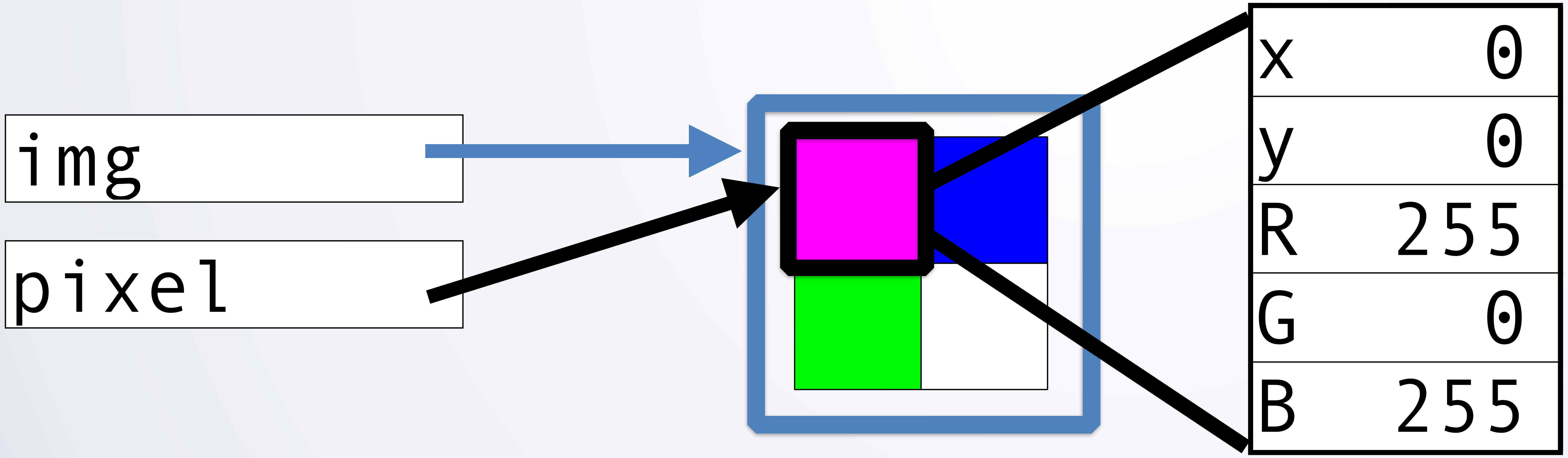
img

pixel

x	0
y	0
R	255
G	0
B	255

Semantics

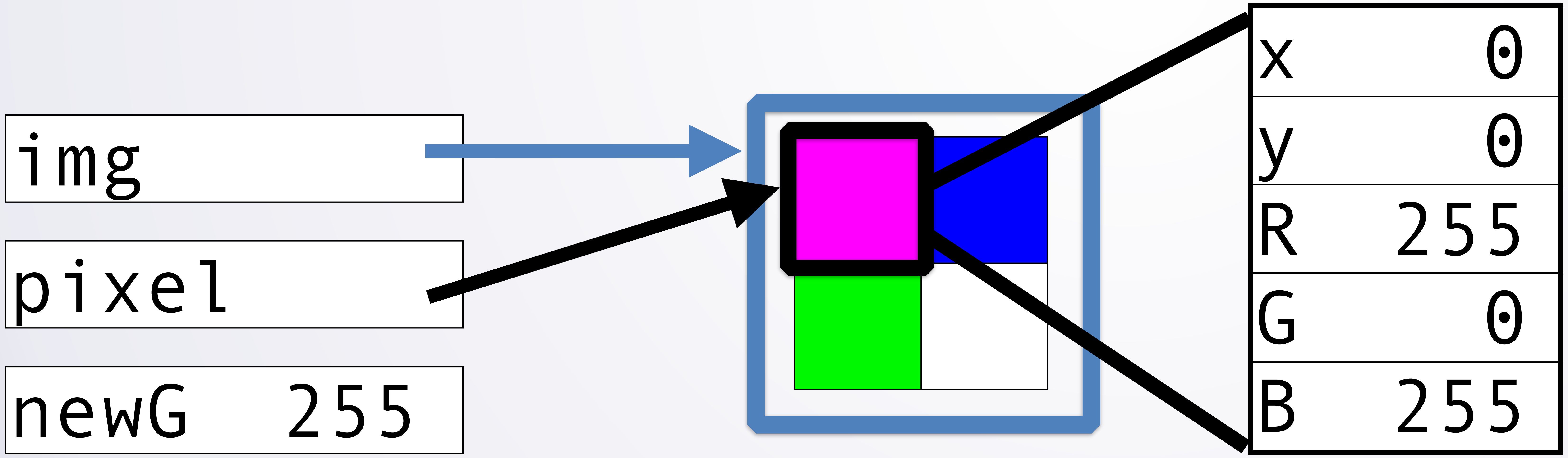
```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```



x	0
y	0
R	255
G	0
B	255

Semantics

```
for (var pixel of img.values()) {
     var newG = 255 - pixel.getGreen();
     pixel.setGreen(newG);
}
```



img

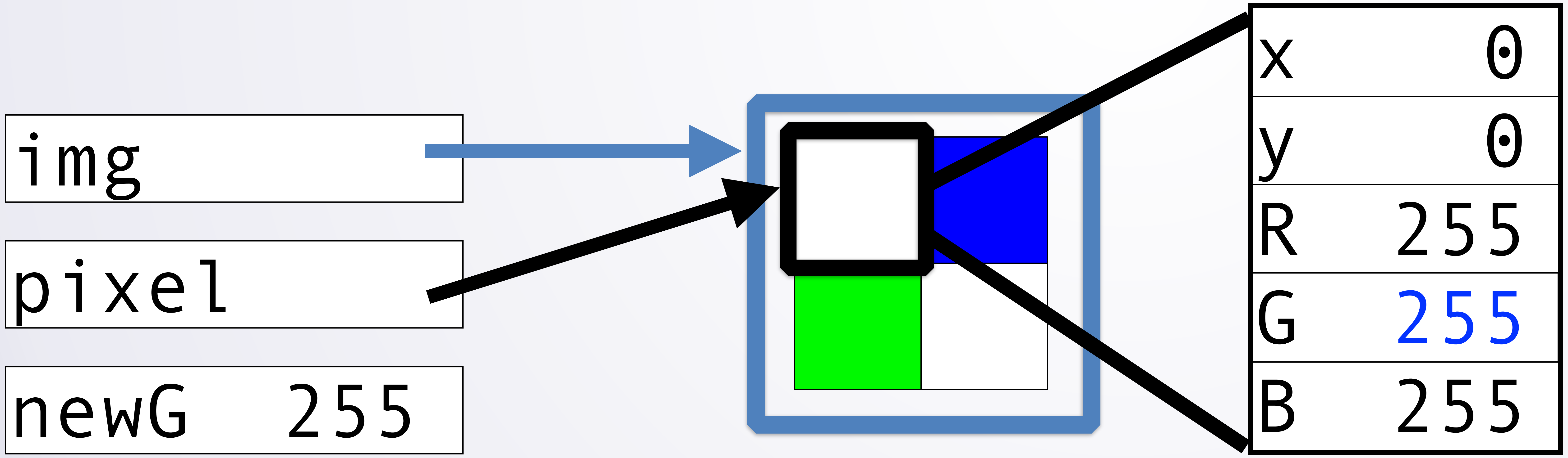
pixel

newG 255

x	0
y	0
R	255
G	0
B	255

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```

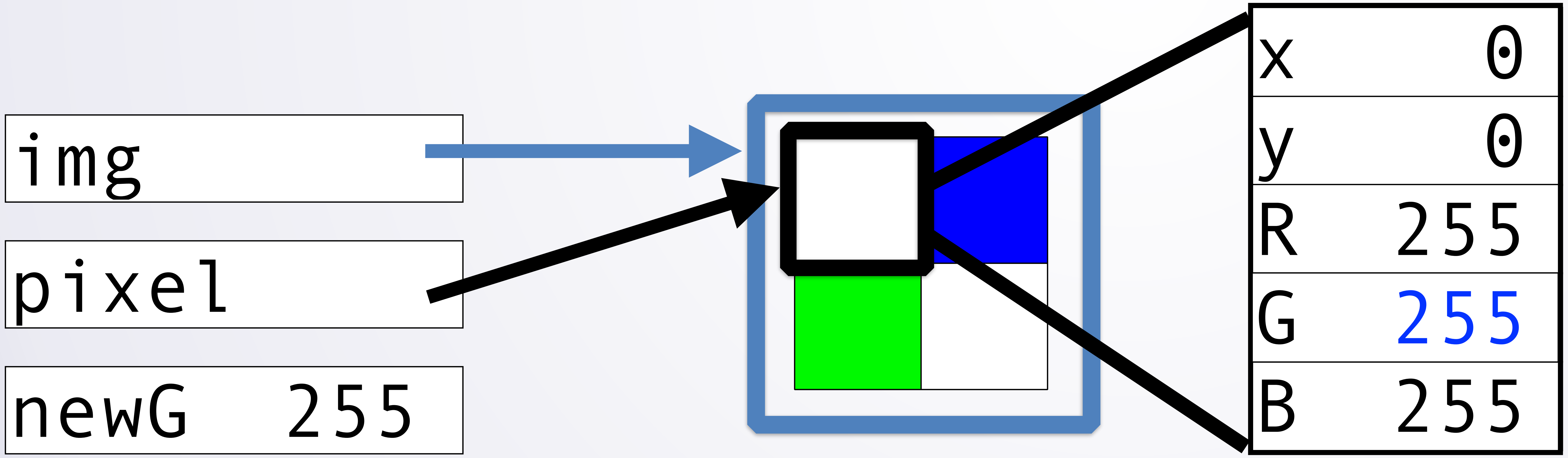


img	
pixel	
newG	255

x	0
y	0
R	255
G	255
B	255

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```



img

pixel

newG 255

x	0
y	0
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G	255
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Semantics

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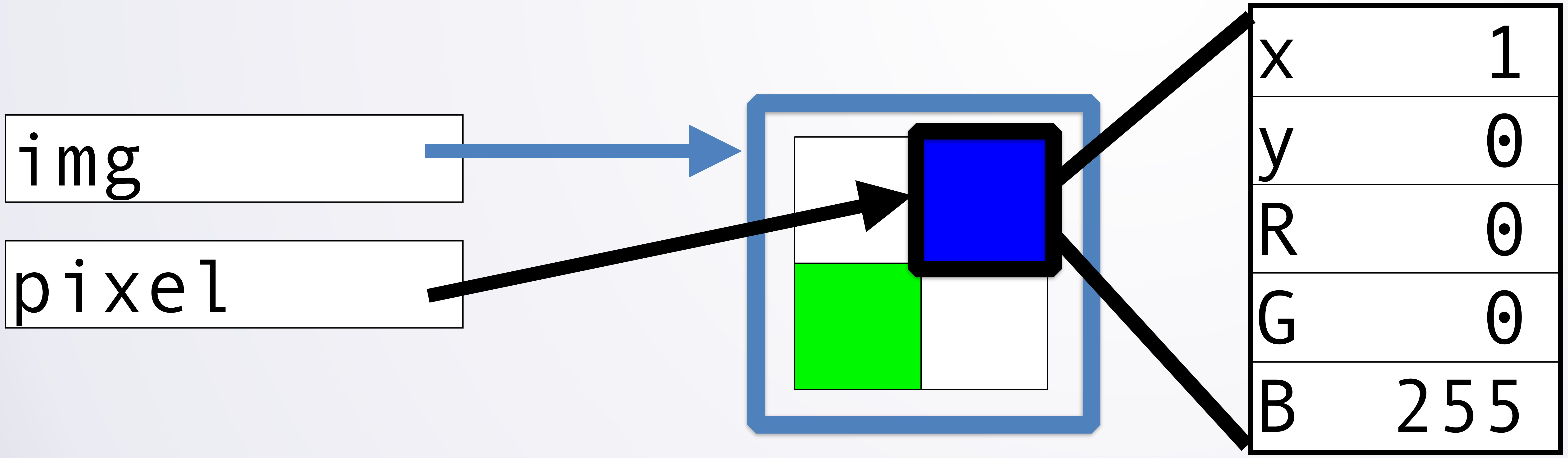
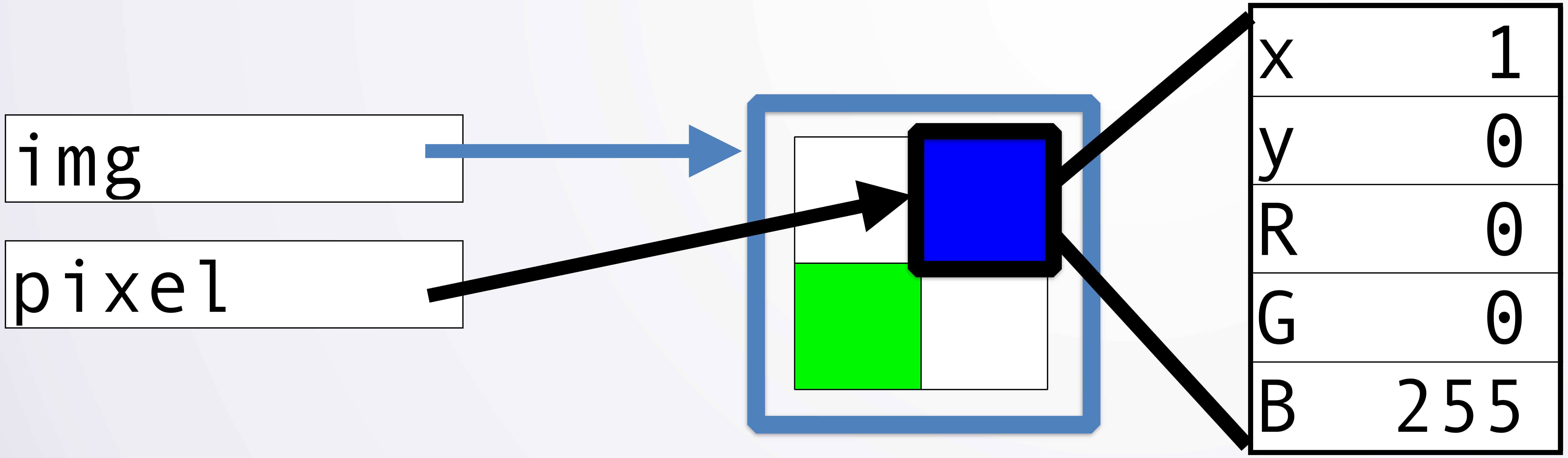


x	1
y	0
R	0
G	0
B	255

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```



x	1
y	0
R	0
G	0
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Semantics

```
for (var pixel of img.values()) {
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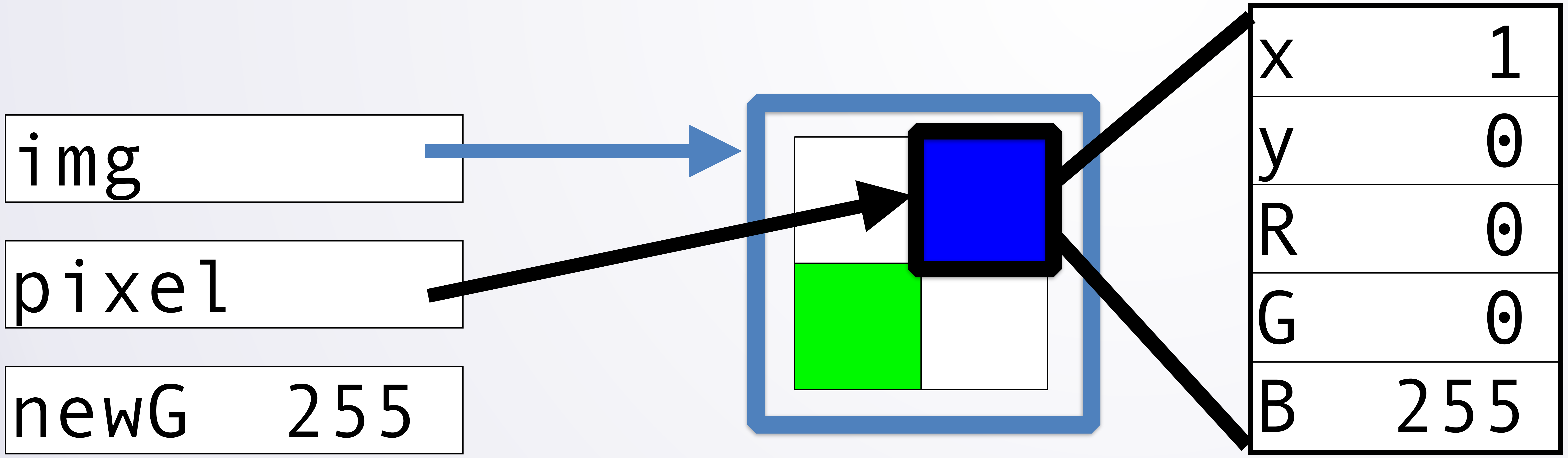

img

pixel

newG 255

x	1
y	0
R	0
G	0
B	255

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
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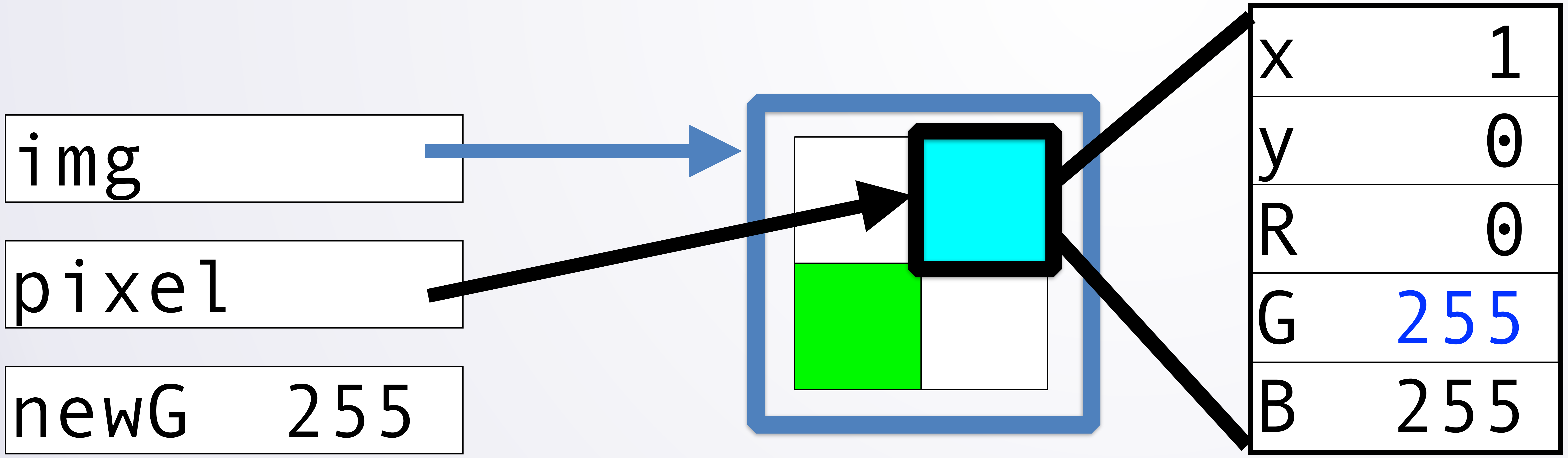

img

pixel

newG 255

x	1
y	0
R	0
G	255
B	255

Semantics

```
for (var pixel of img.values()) {
     var newG = 255 - pixel.getGreen();
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}
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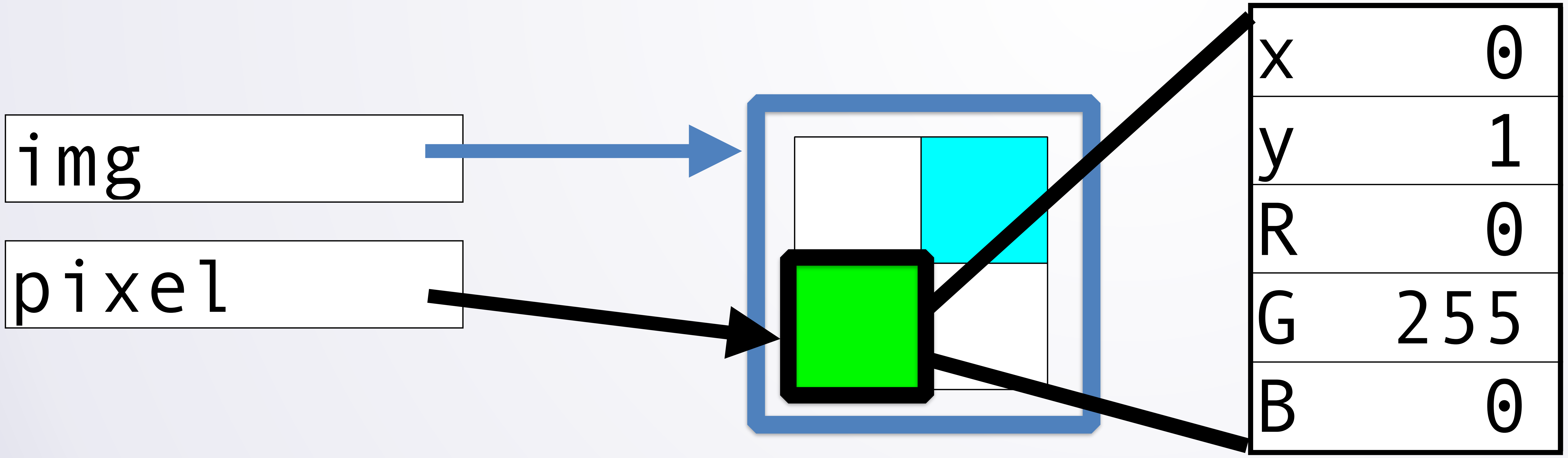


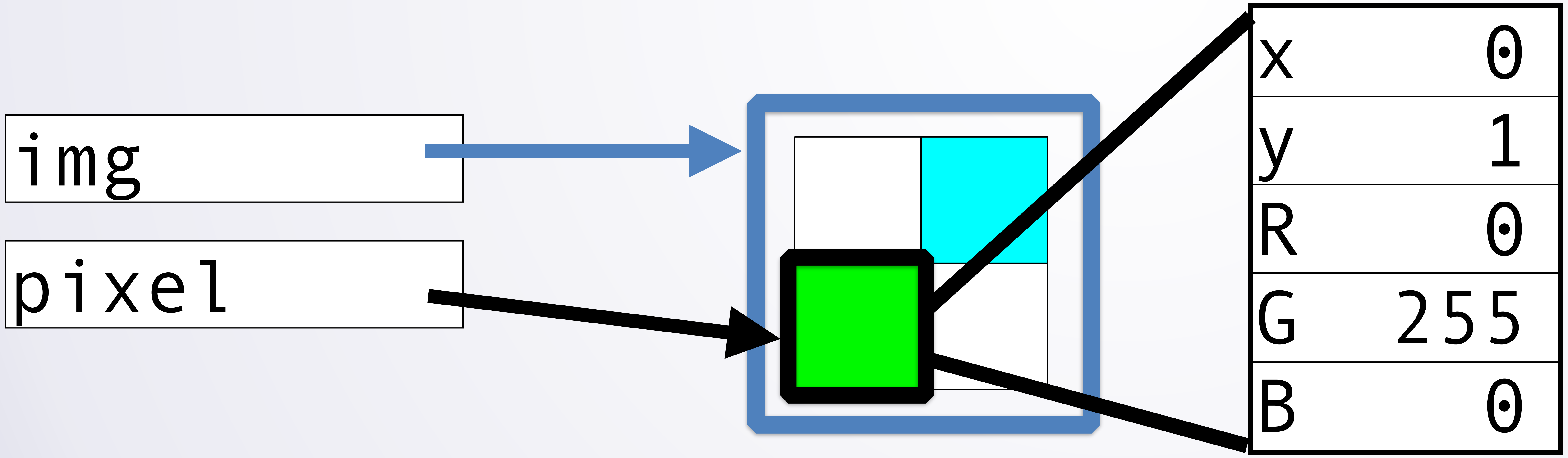
img

pixel

x	0
y	1
R	0
G	255
B	0

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```



x	0
y	1
R	0
G	255
B	0

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Semantics

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for (var pixel of img.values()) {
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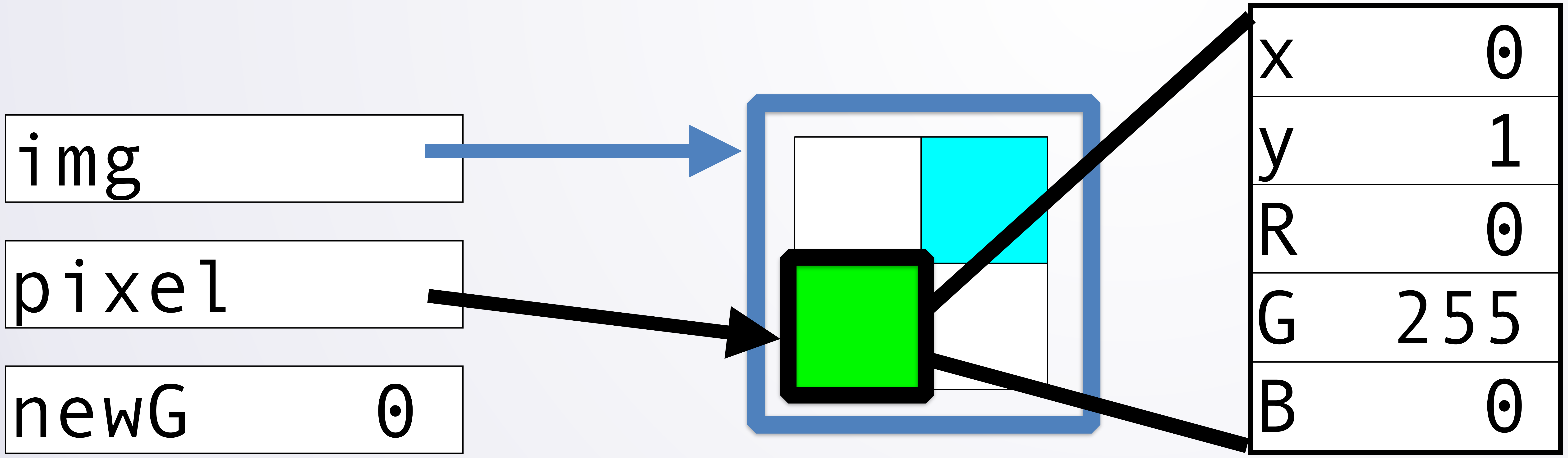


img

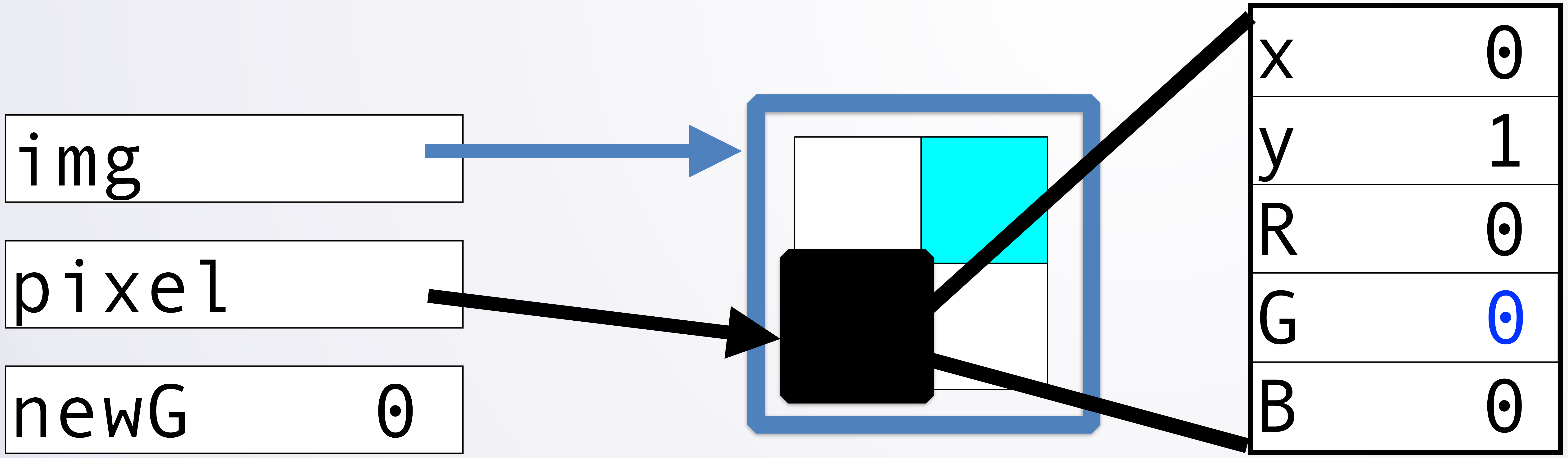
pixel

newG 0

x	0
y	1
R	0
G	255
B	0

Semantics

```
for (var pixel of img.values()) {
    var newG = 255 - pixel.getGreen();
    pixel.setGreen(newG);
}
```



img

pixel

newG 0

x	0
y	1
R	0
G	0
B	0

Semantics

```
for (var pixel of img.values()) {
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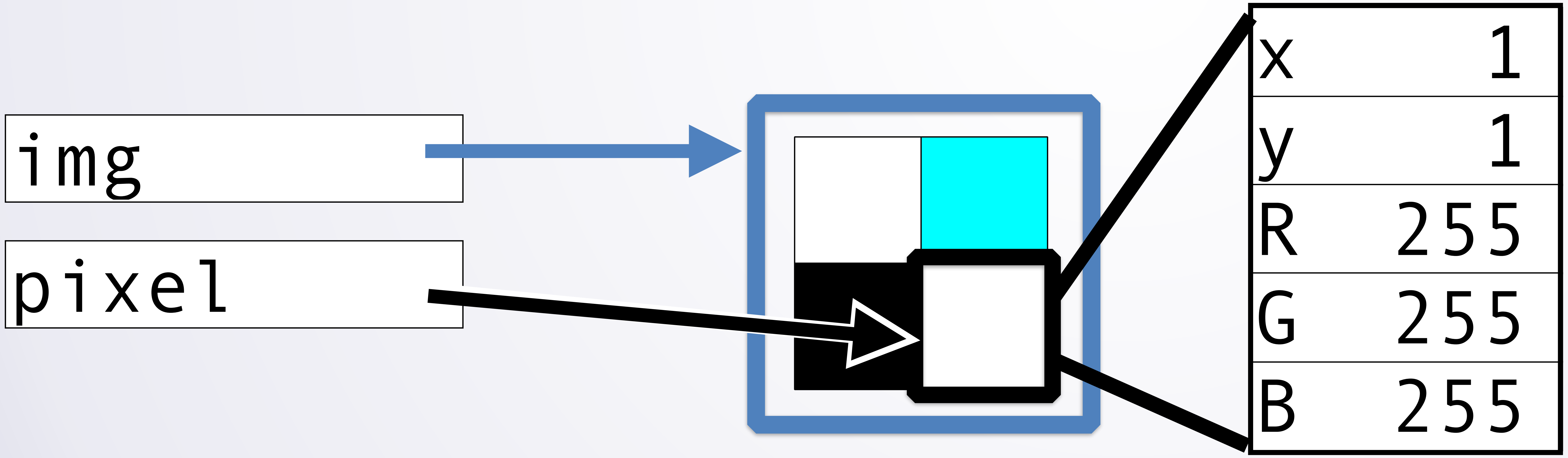

x	1
y	1
R	255
G	255
B	255

Semantics

```
for (var pixel of img.values()) {
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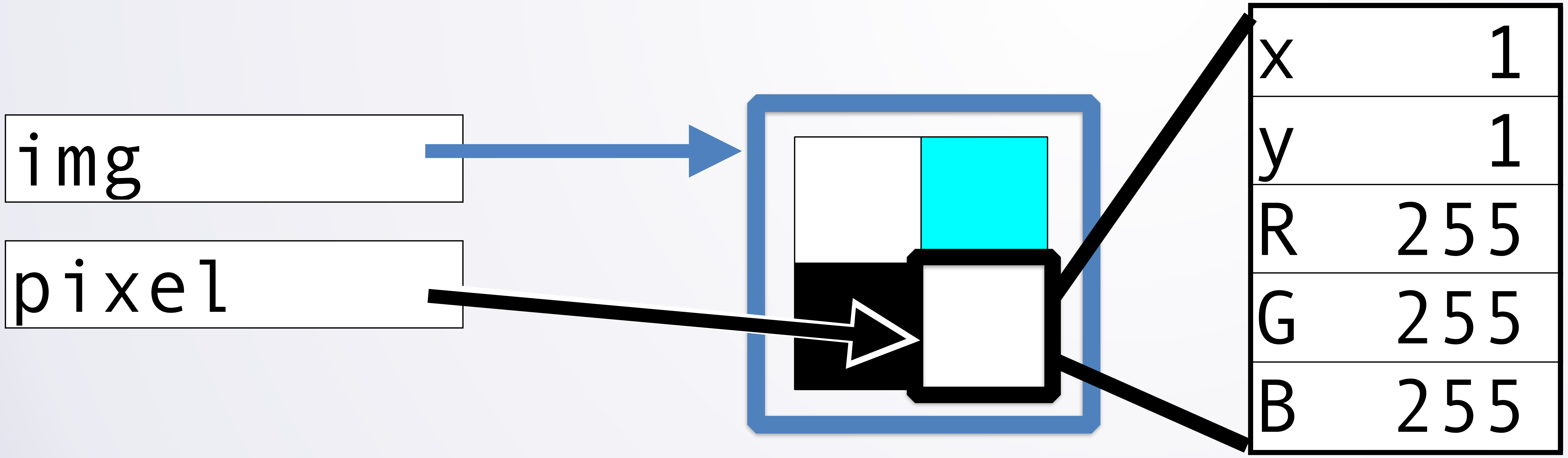

x	1
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R	255
G	255
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Semantics

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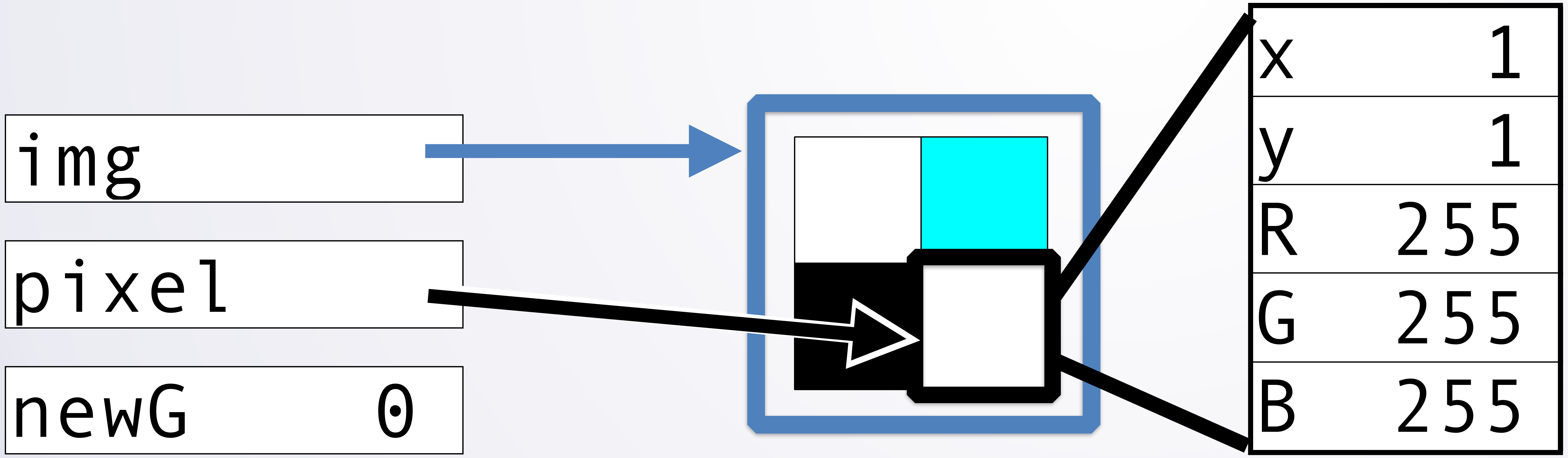

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Semantics

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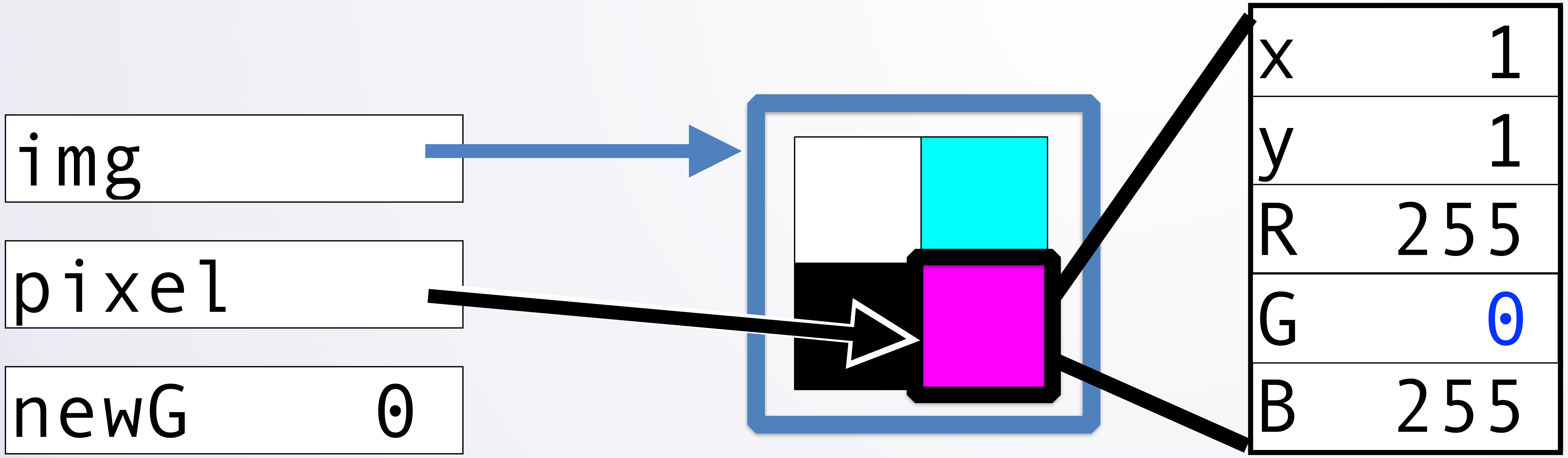

img	
pixel	
newG	0

x	1
y	1
R	255
G	0
B	255

Semantics

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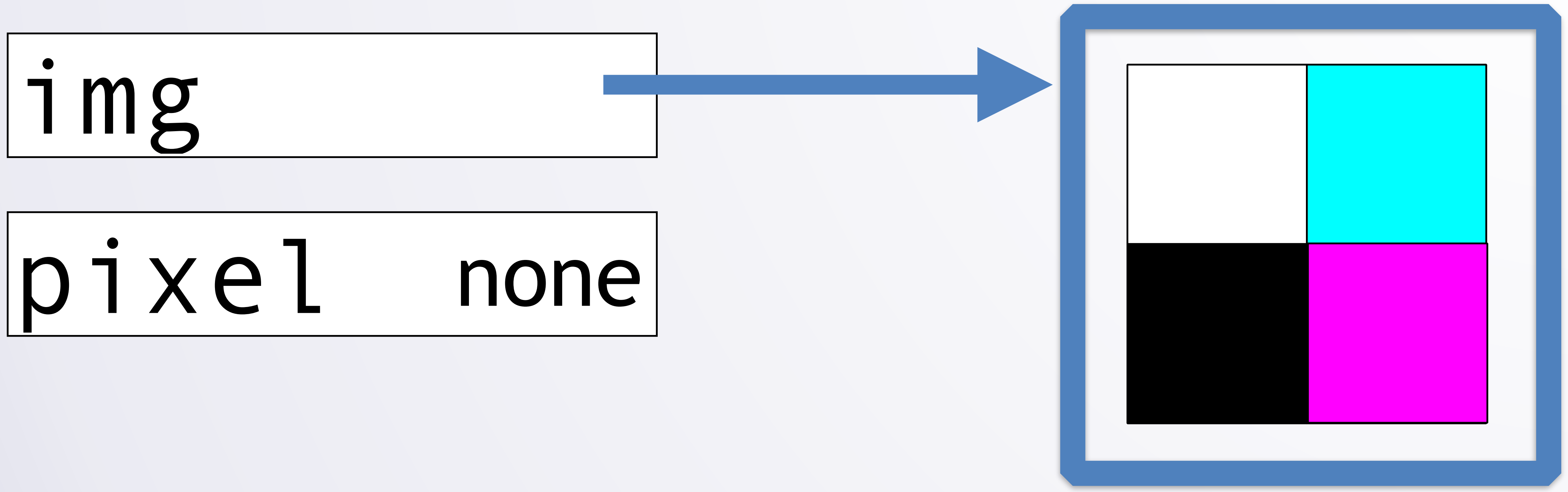

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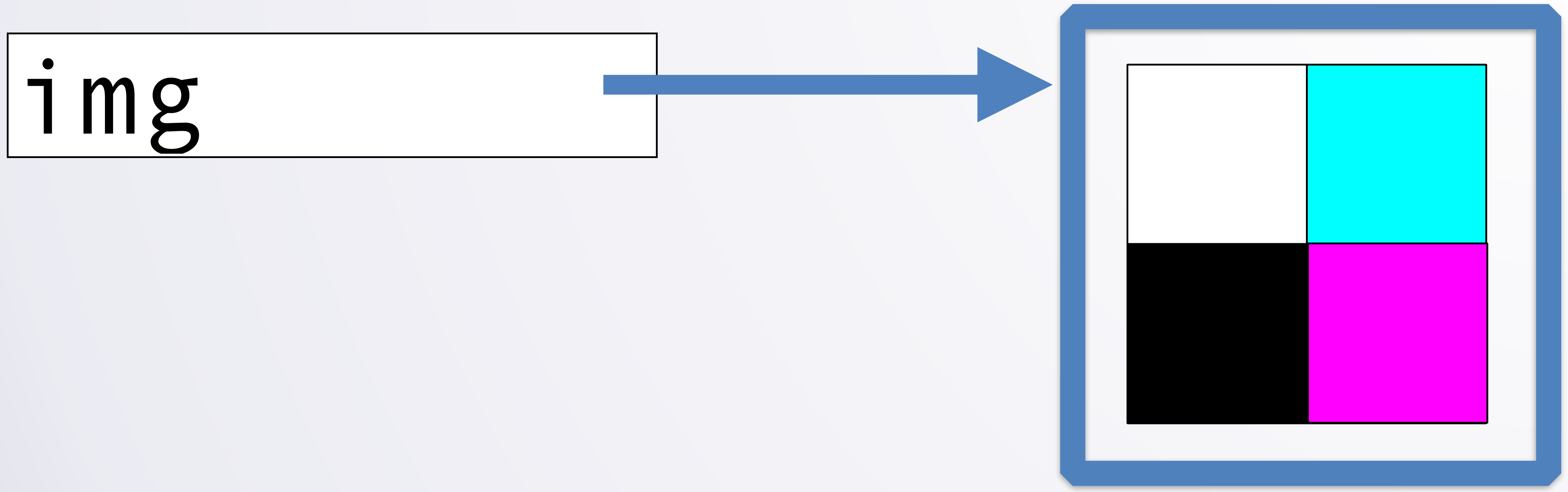

img