Algorithm

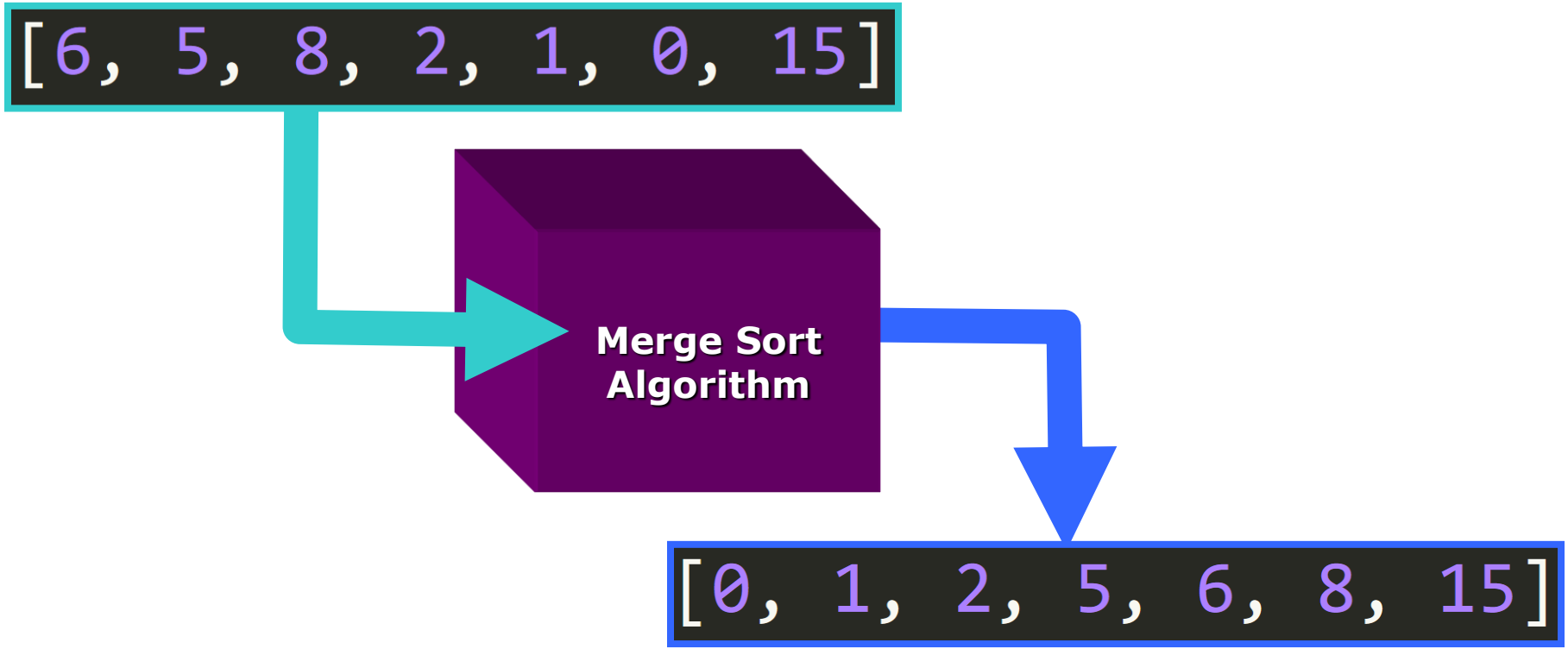
Merge Sort

Visual Walkthrough

Merge Sort

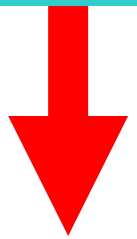
- Divide and Conquer Algorithm (recursion).
- Divides the list into **two halves.**
- Calls itself recursively for each half (left and right) until they only contain one element.
- Merges the two halves.
- Very efficient for large sequential data (such as lists).
- Not in-place sorting algorithm. Requires additional space.

Merge Sort



Merge Sort

```
[6, 5, 8, 2, 1, 0, 15]
```



Sort

```
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```
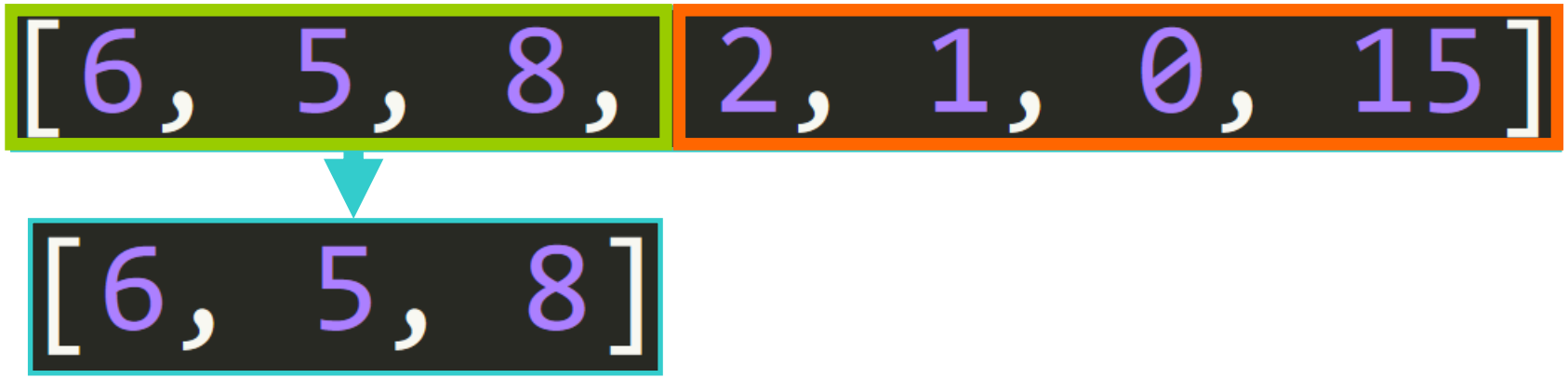

Merge Sort

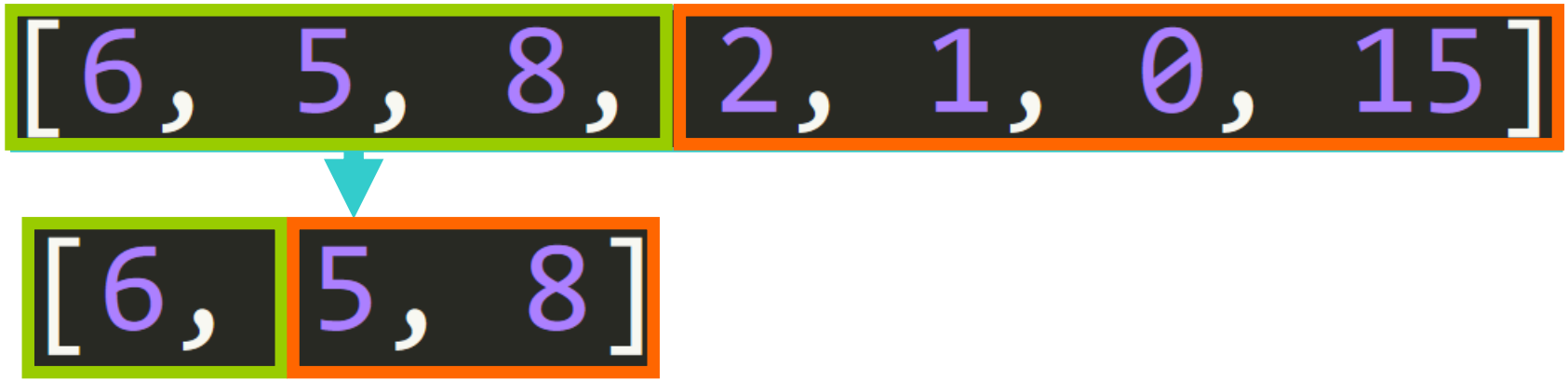
```
[6, 5, 8, 2, 1, 0, 15]
```

Merge Sort

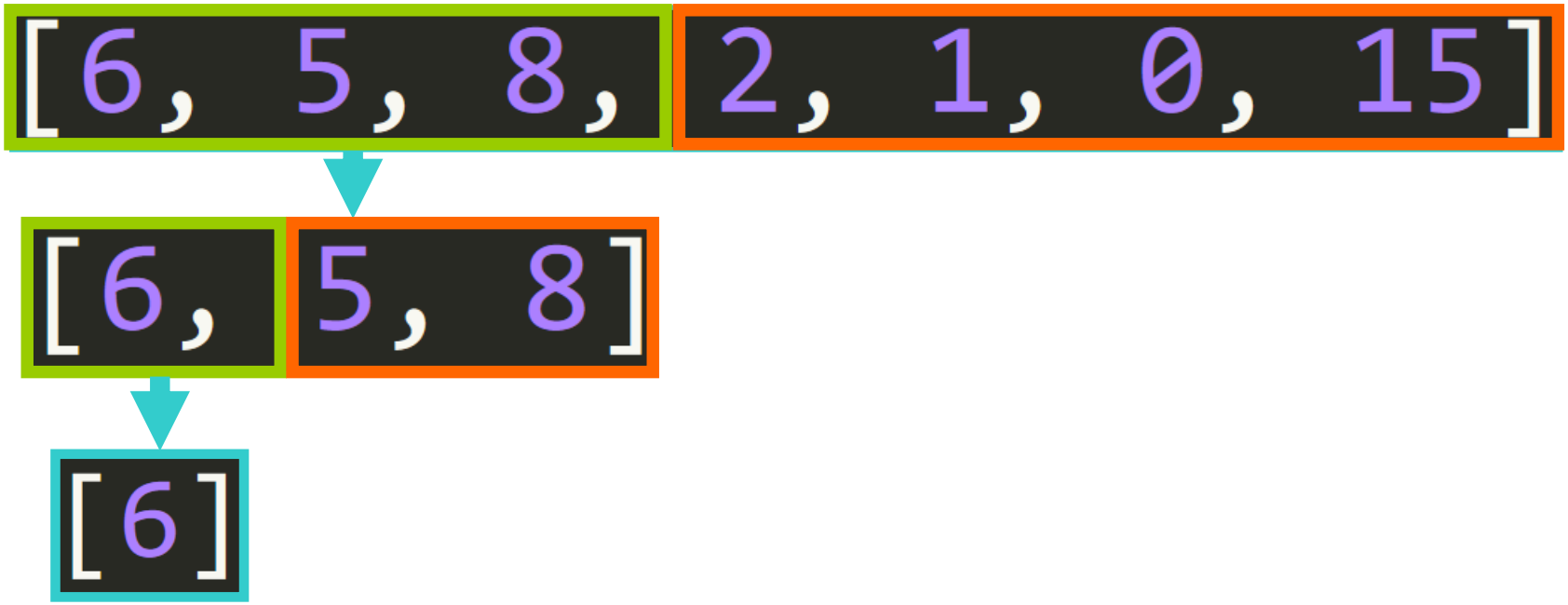
Merge Sort



Merge Sort

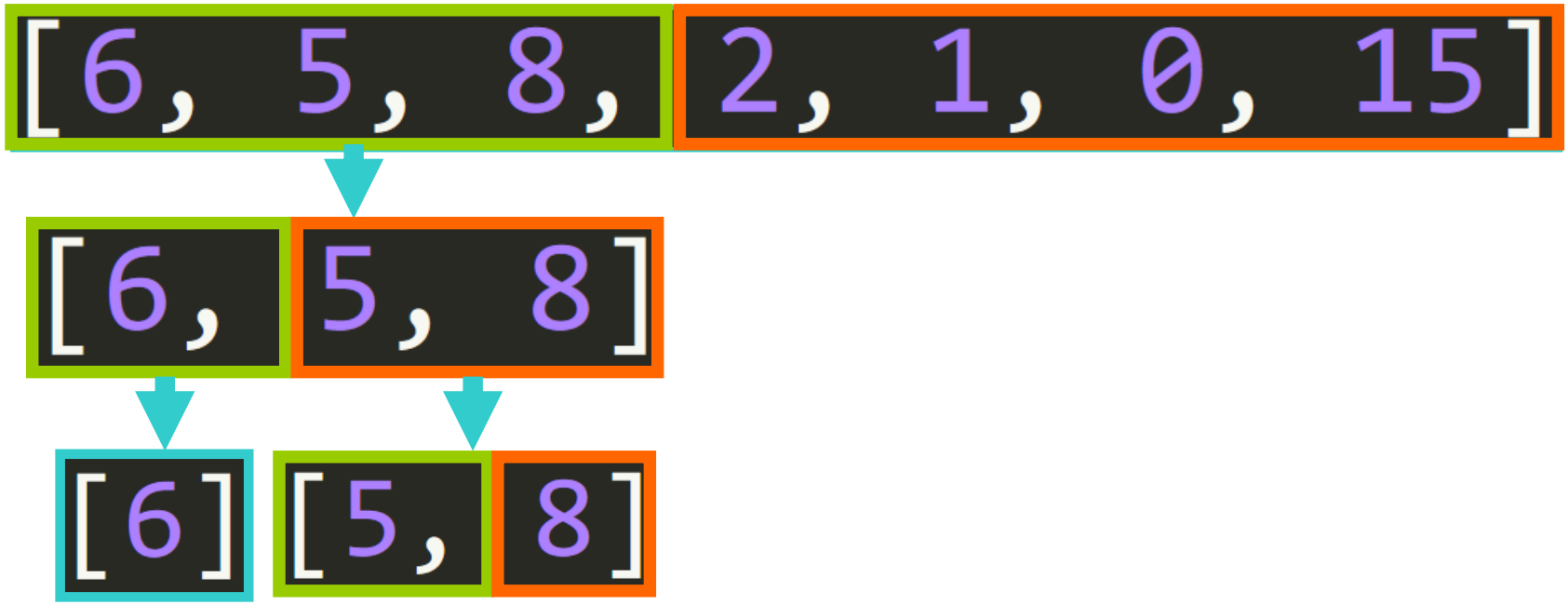


Merge Sort



Merge Sort

Merge Sort



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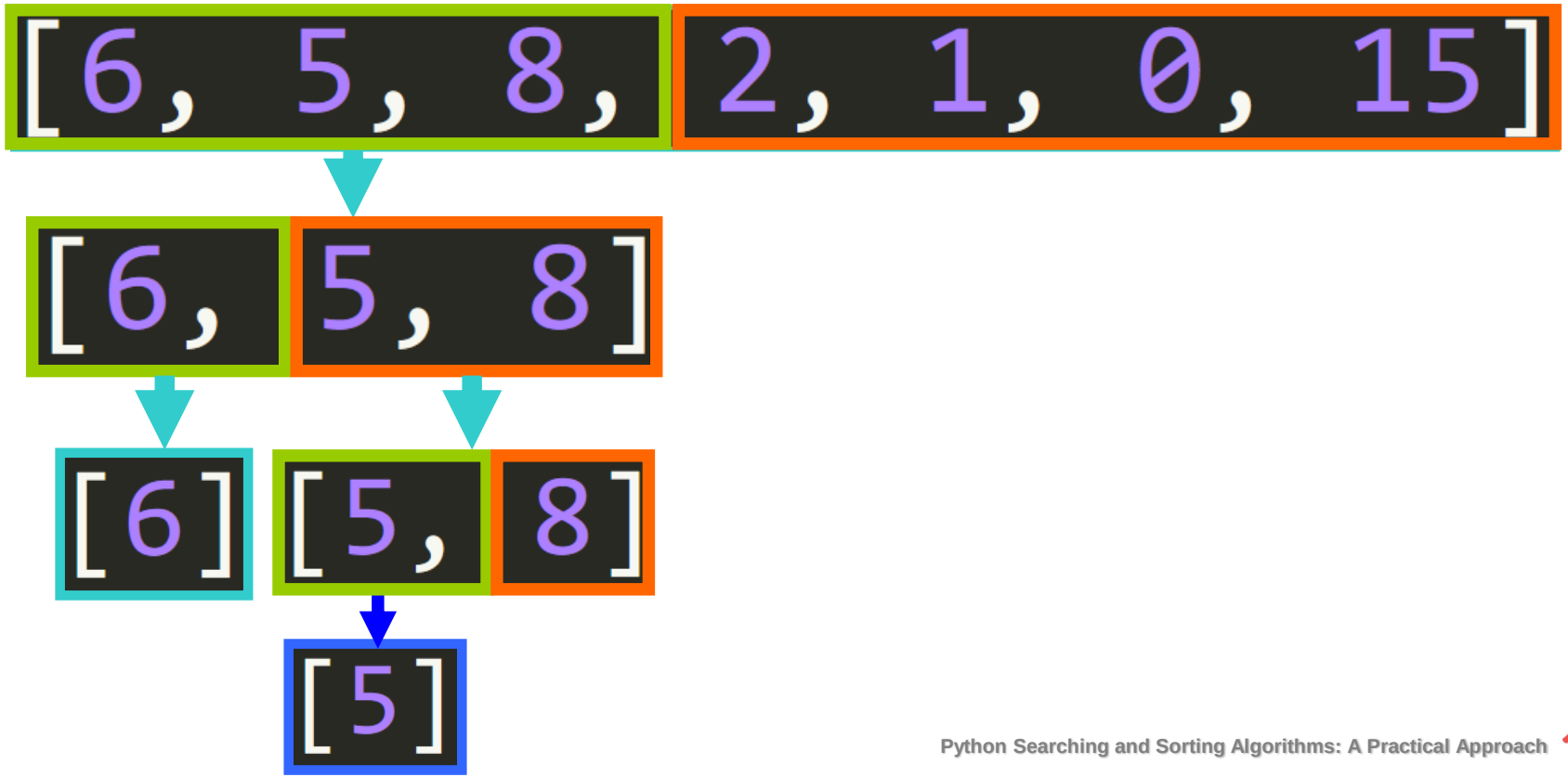
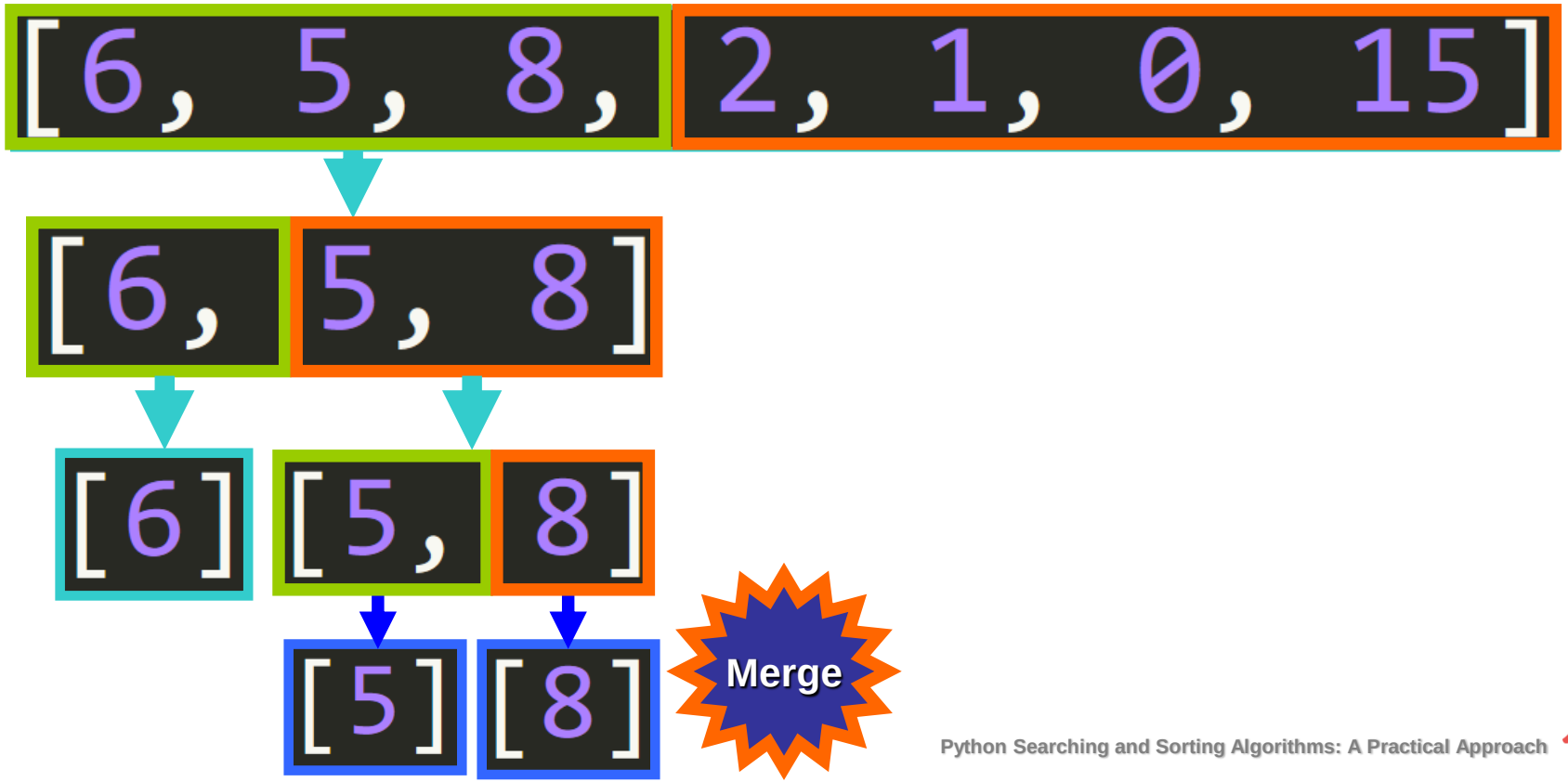
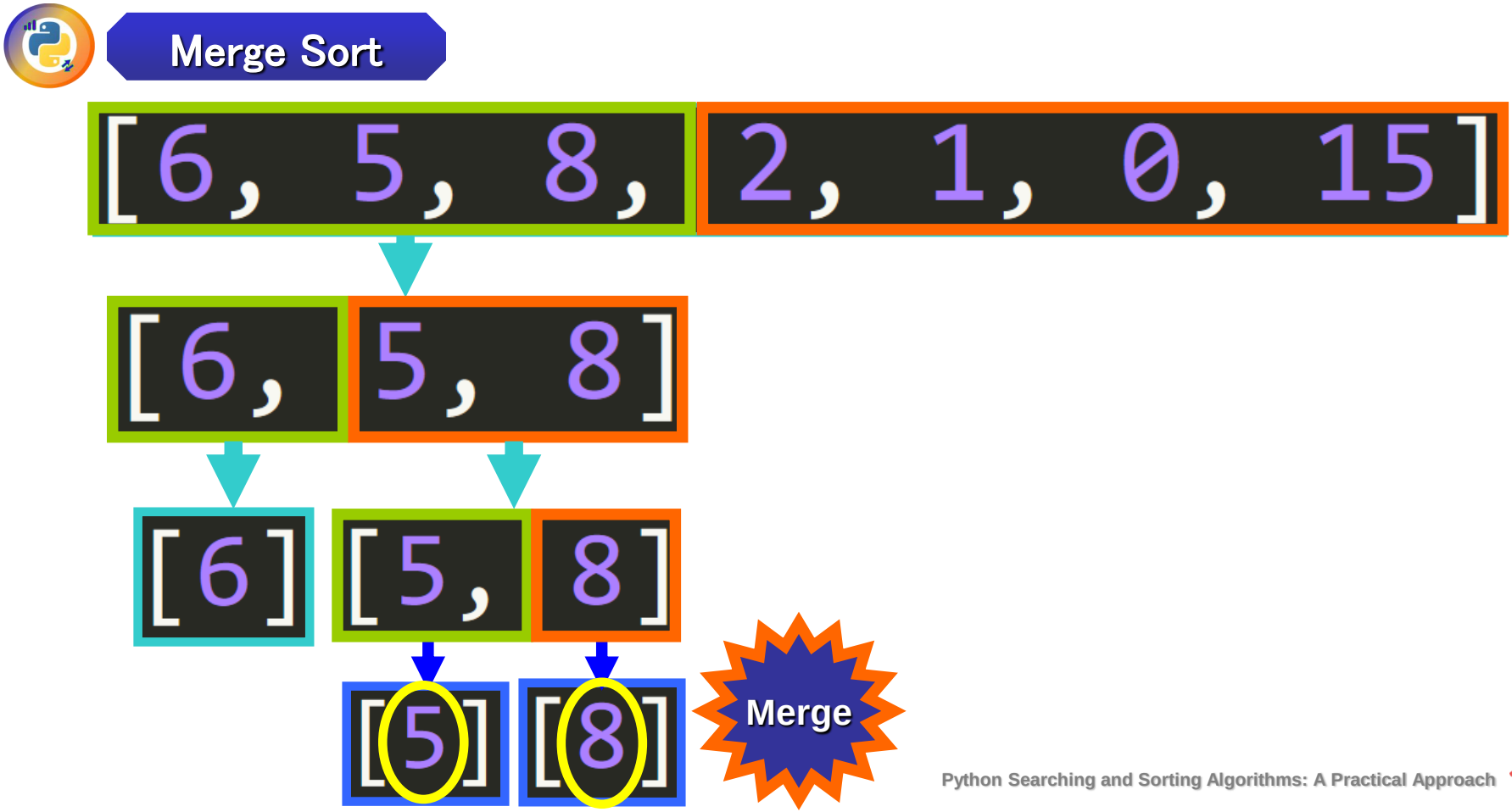


Merge Sort




Merge Sort
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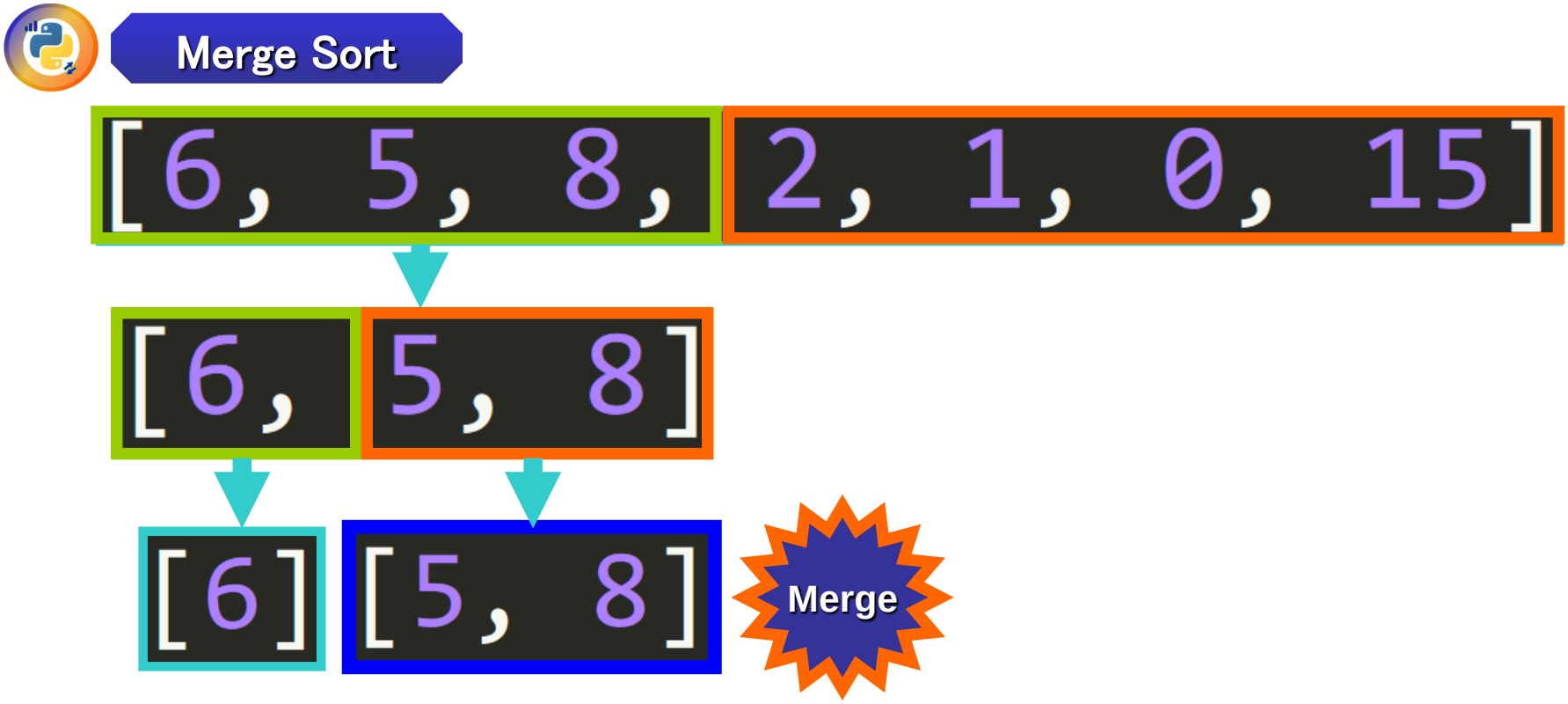
[5]
[8]
Merge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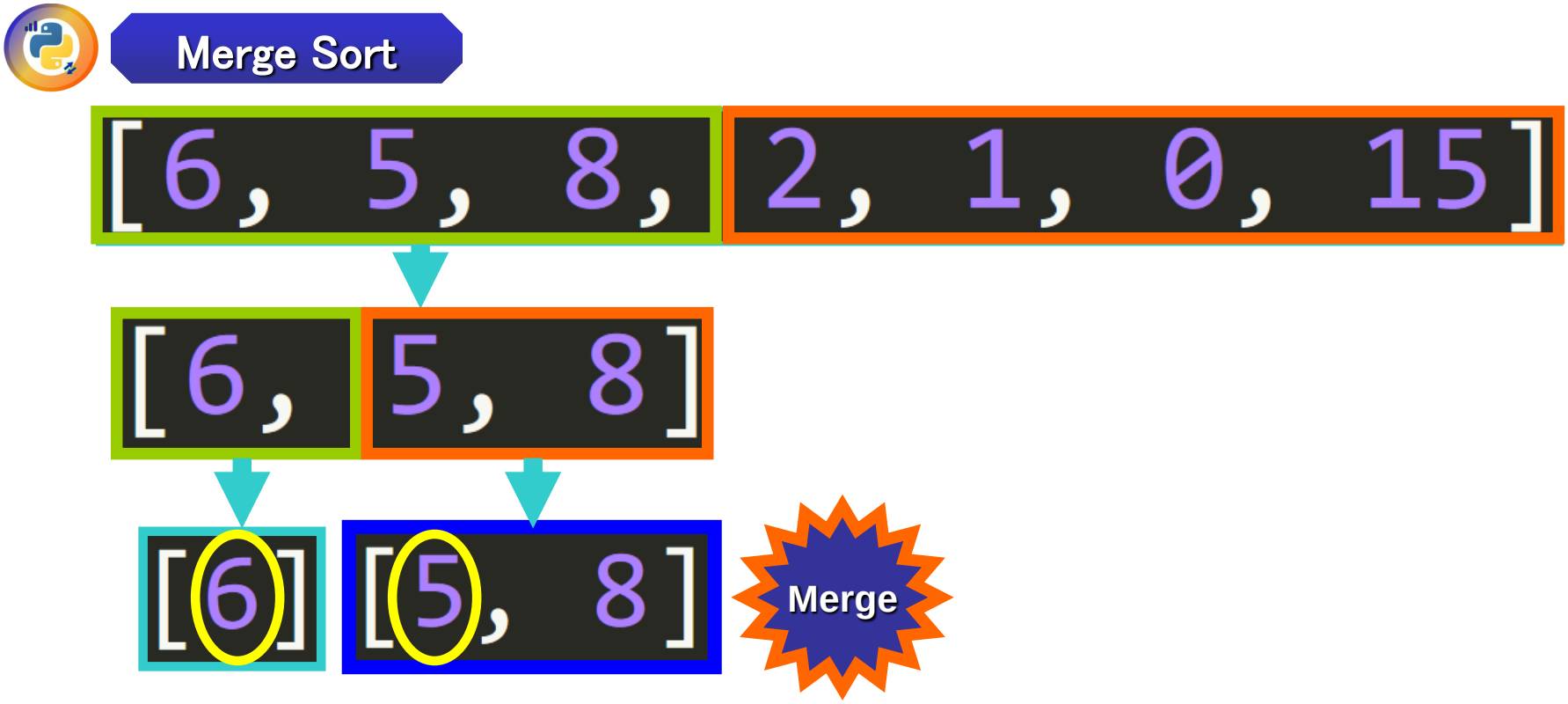
Merge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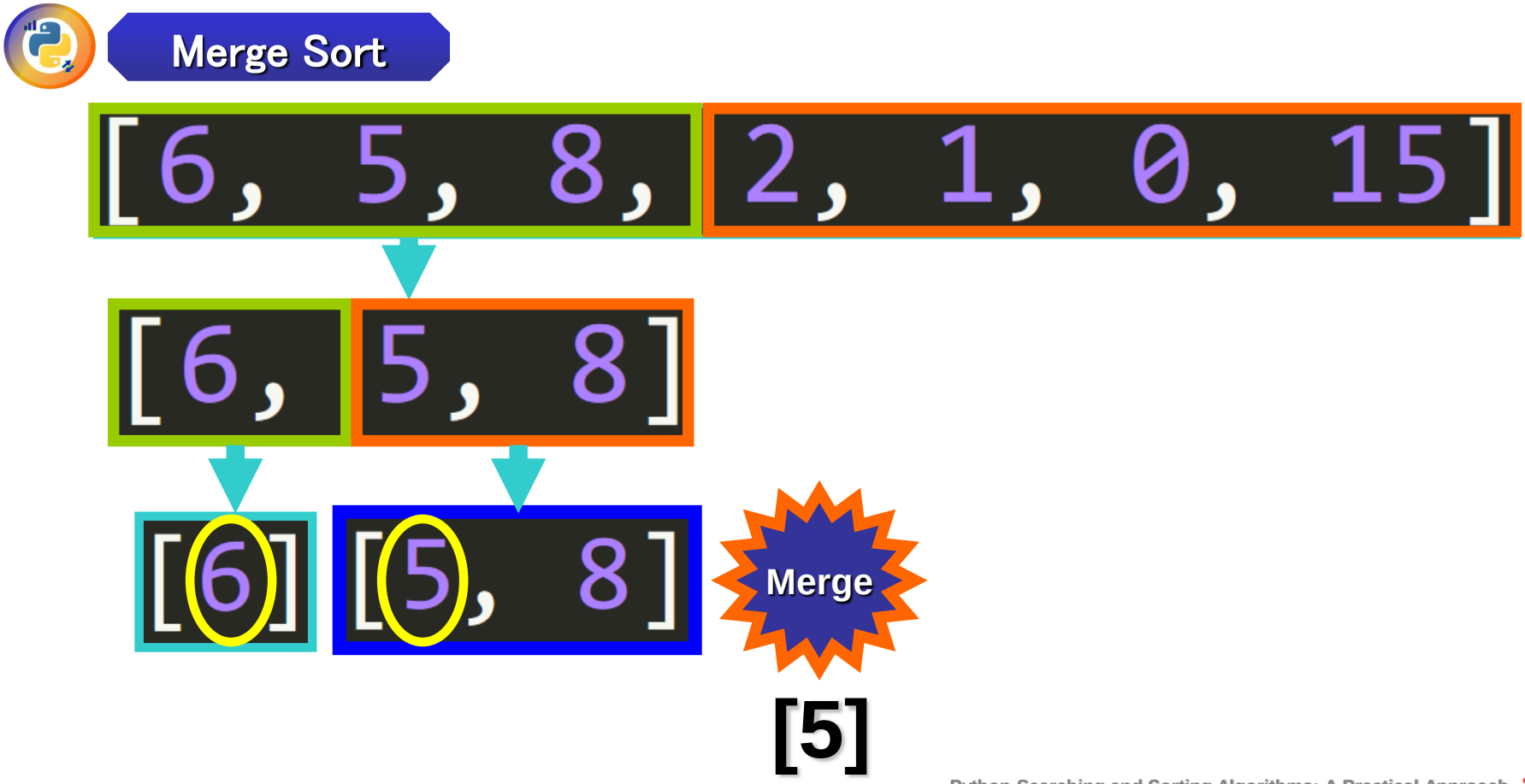
Merge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Merge
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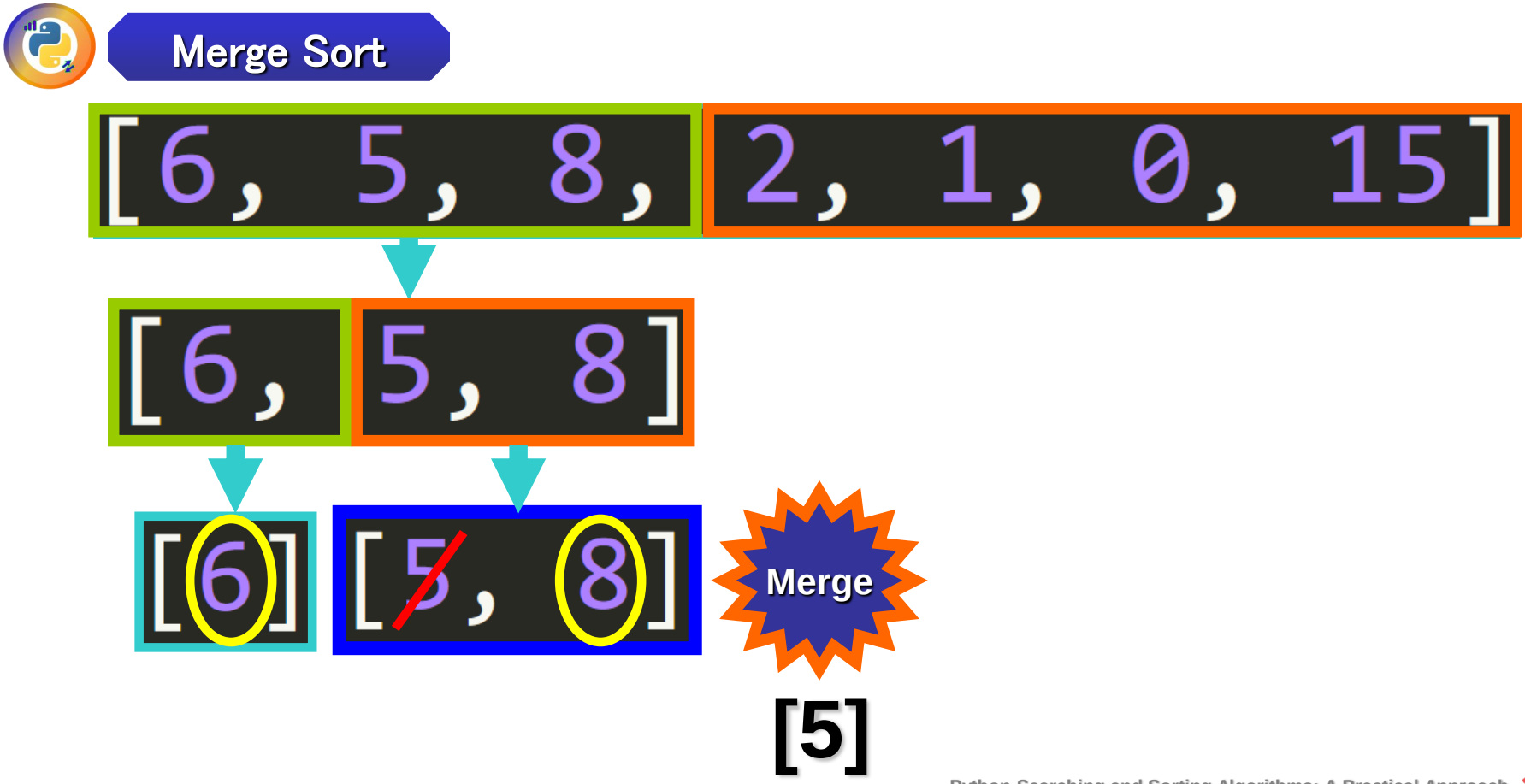
Merge Sort
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Merge
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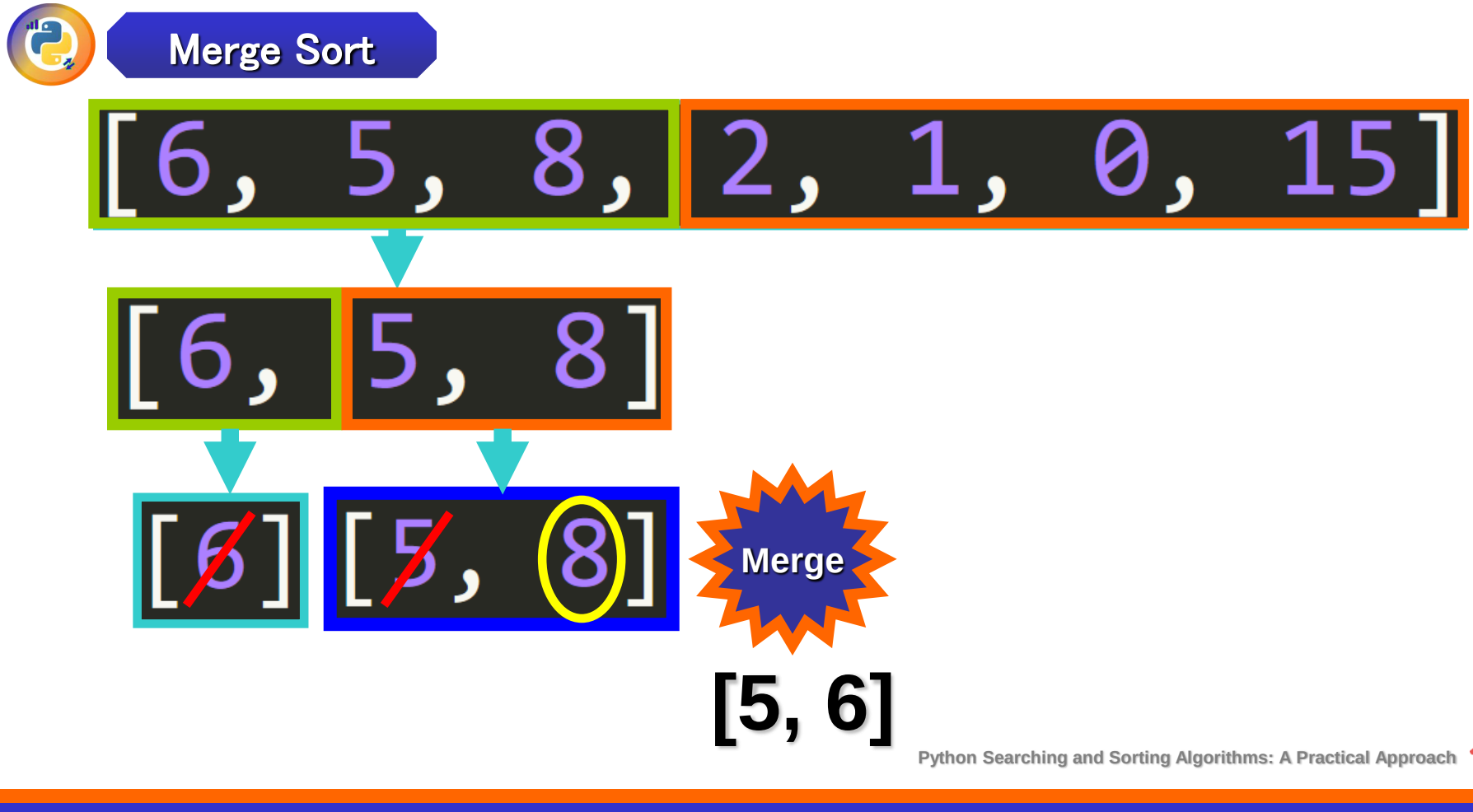
Merge Sort
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Merge
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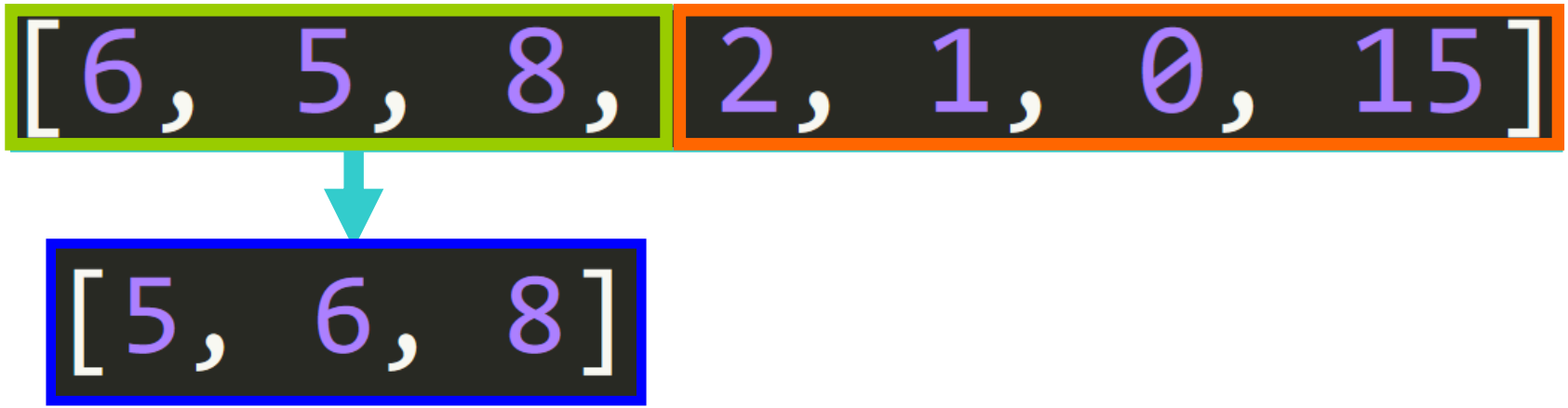
Merge Sort

Merge Sort



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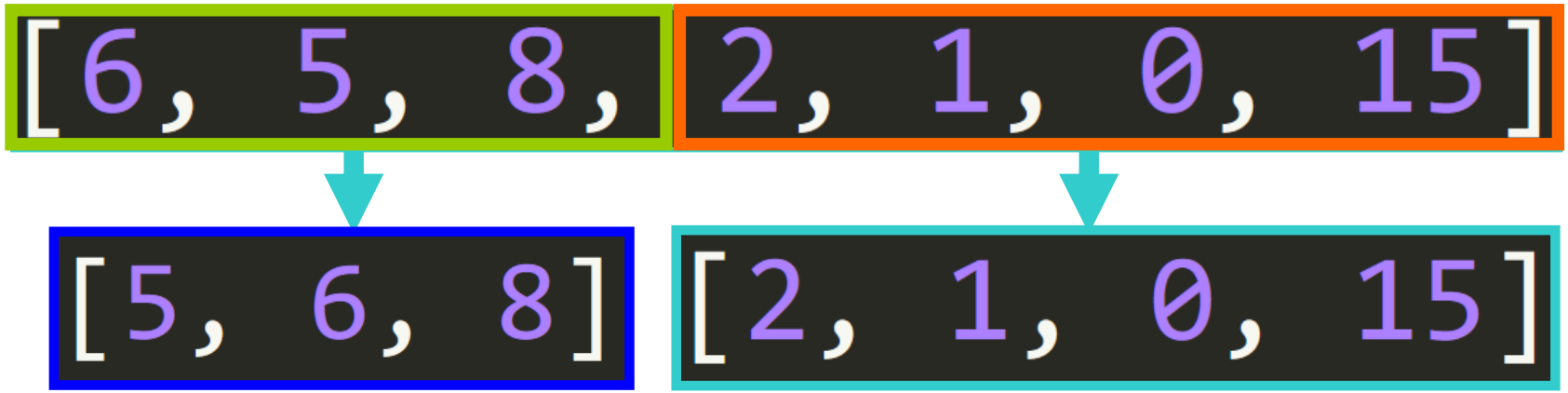

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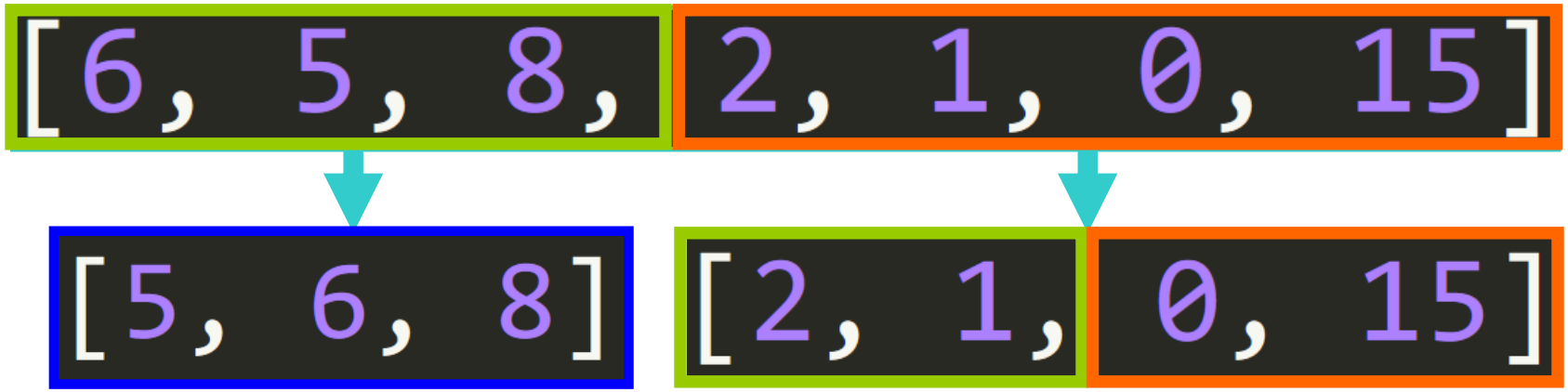

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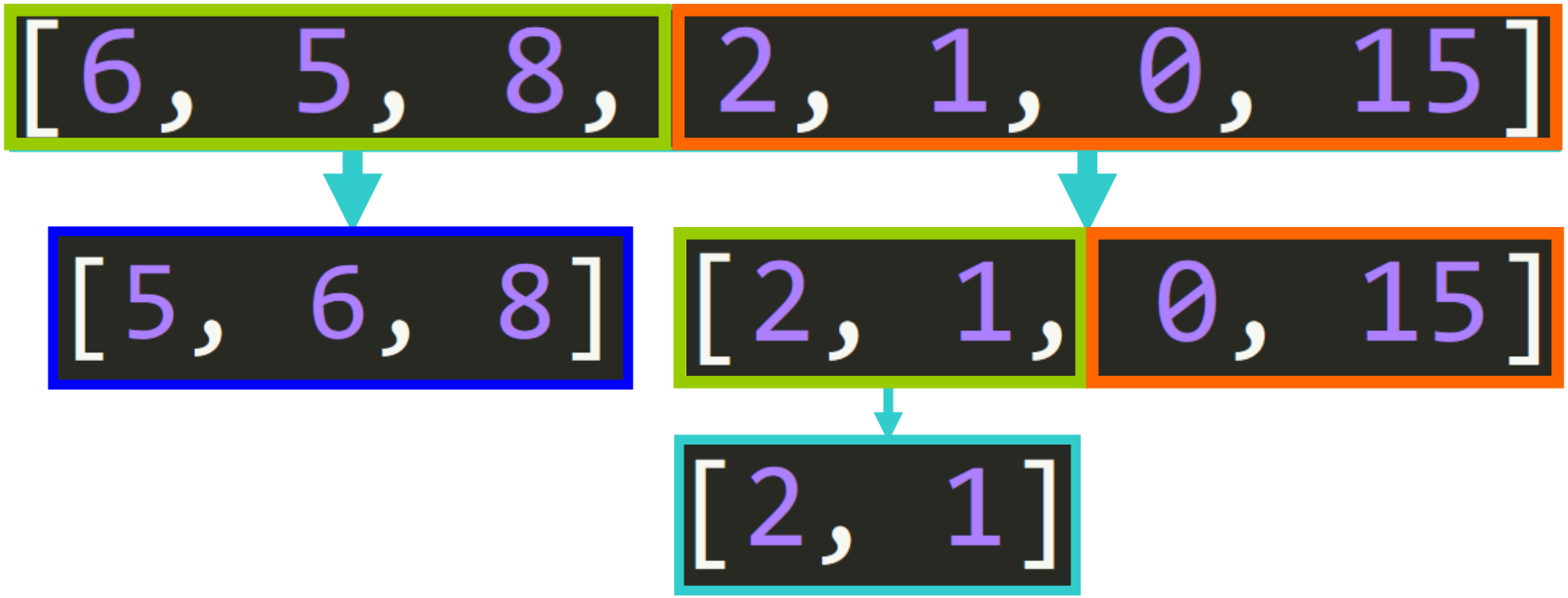

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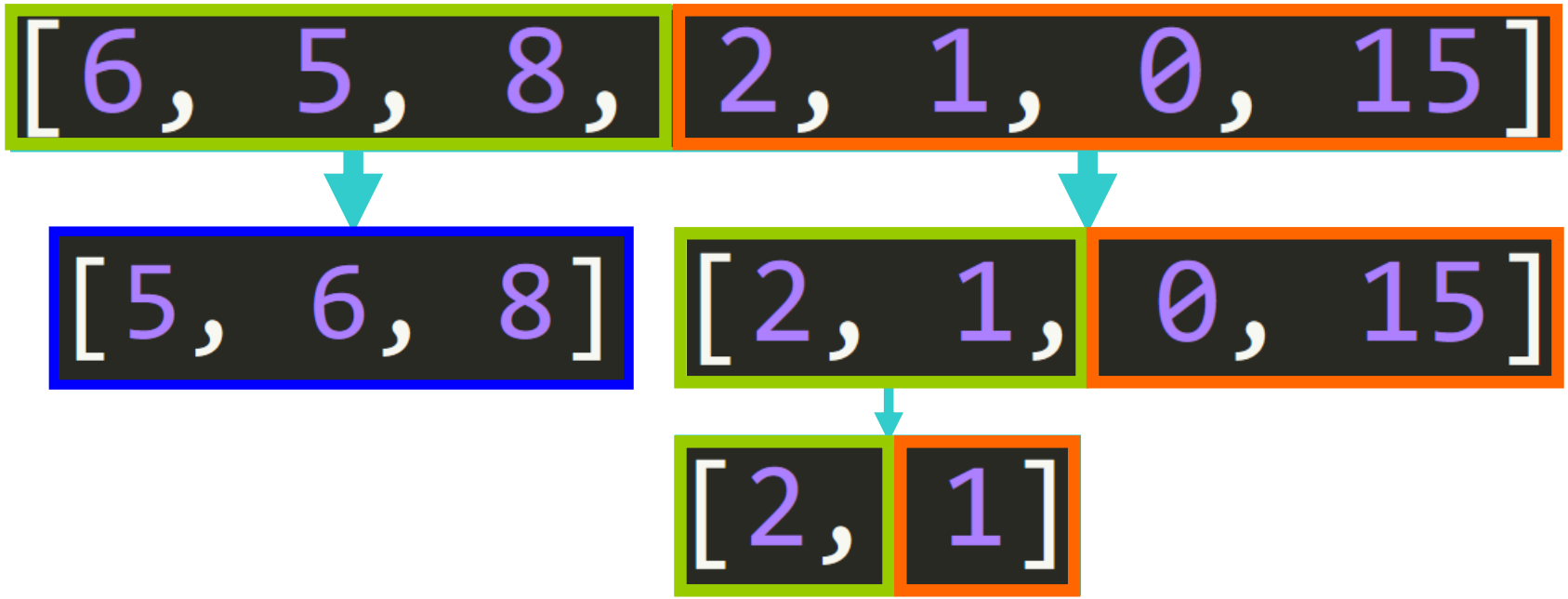

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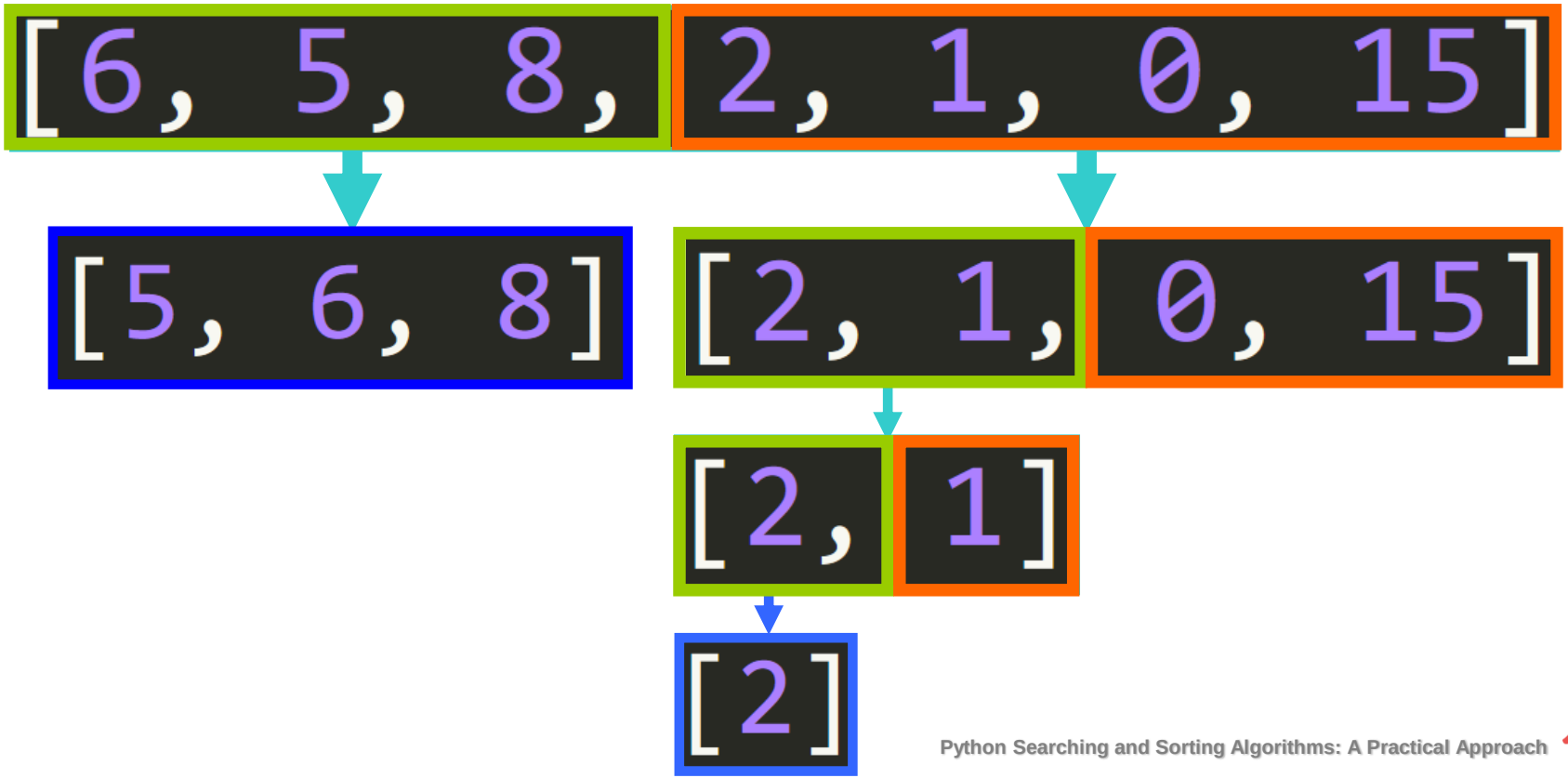

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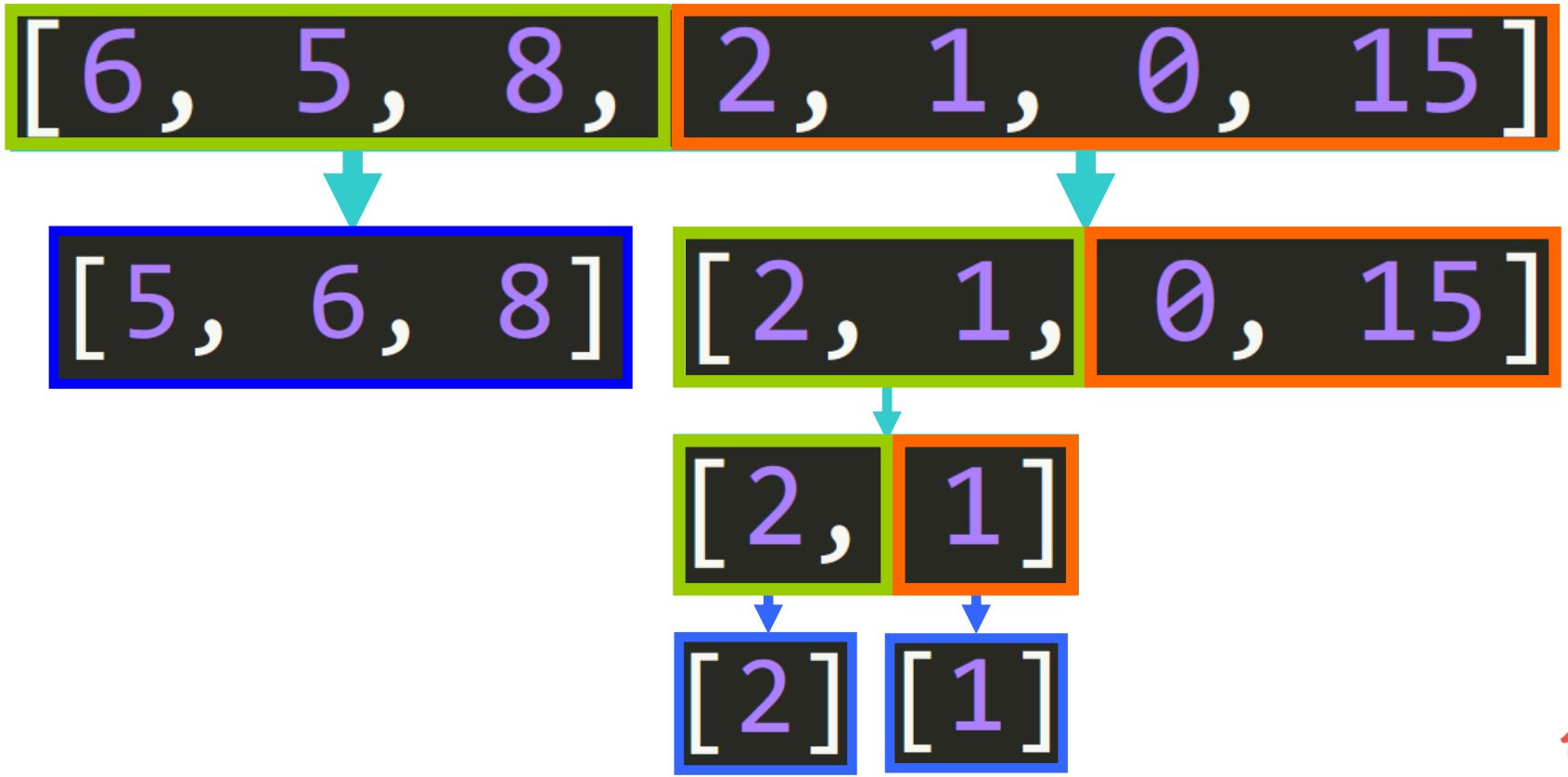

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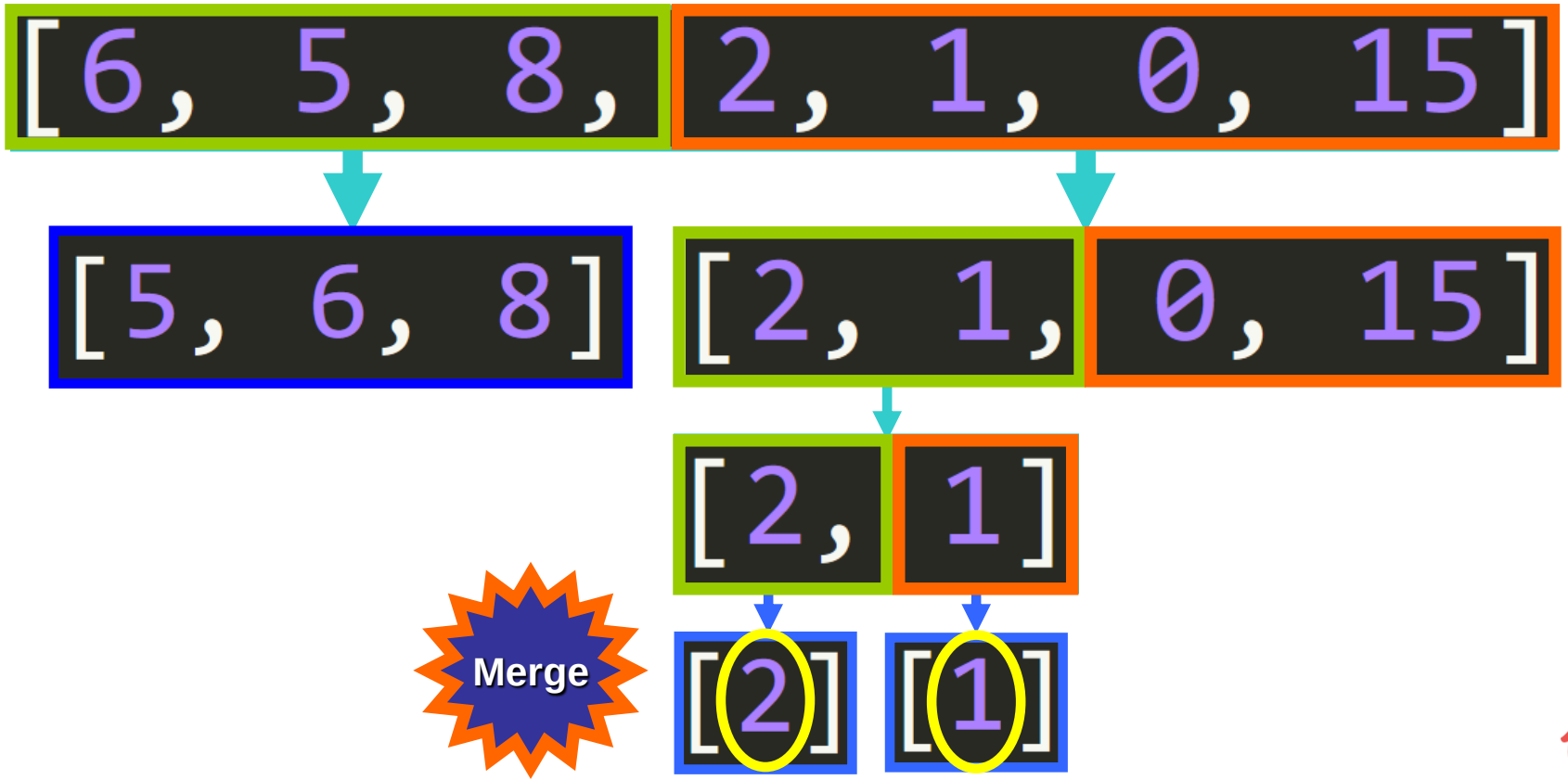

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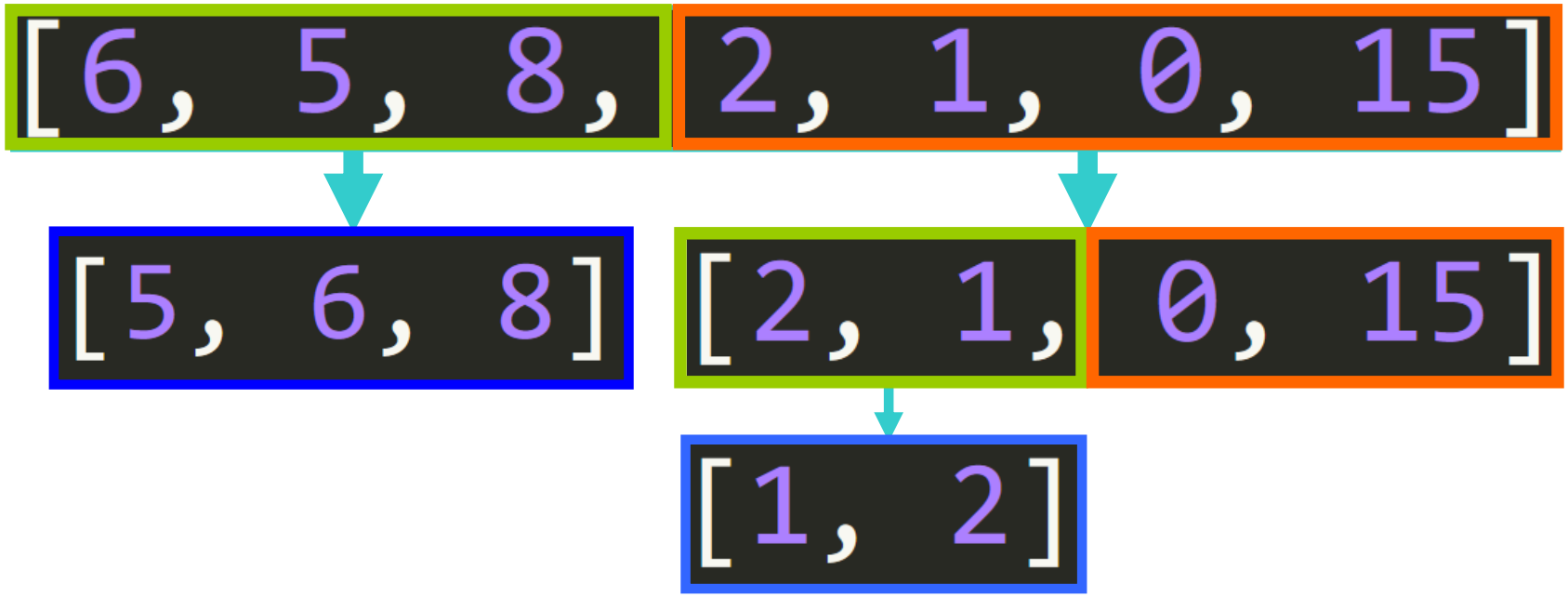

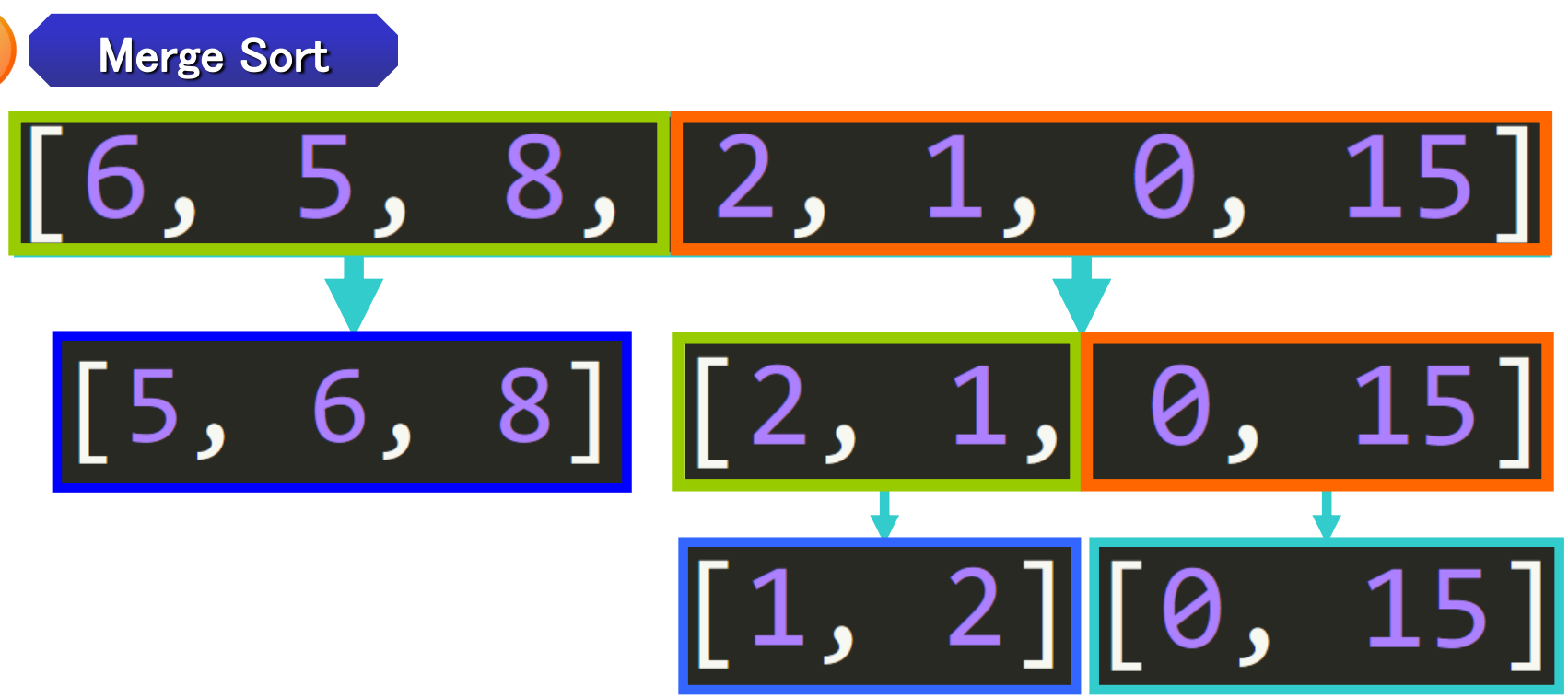
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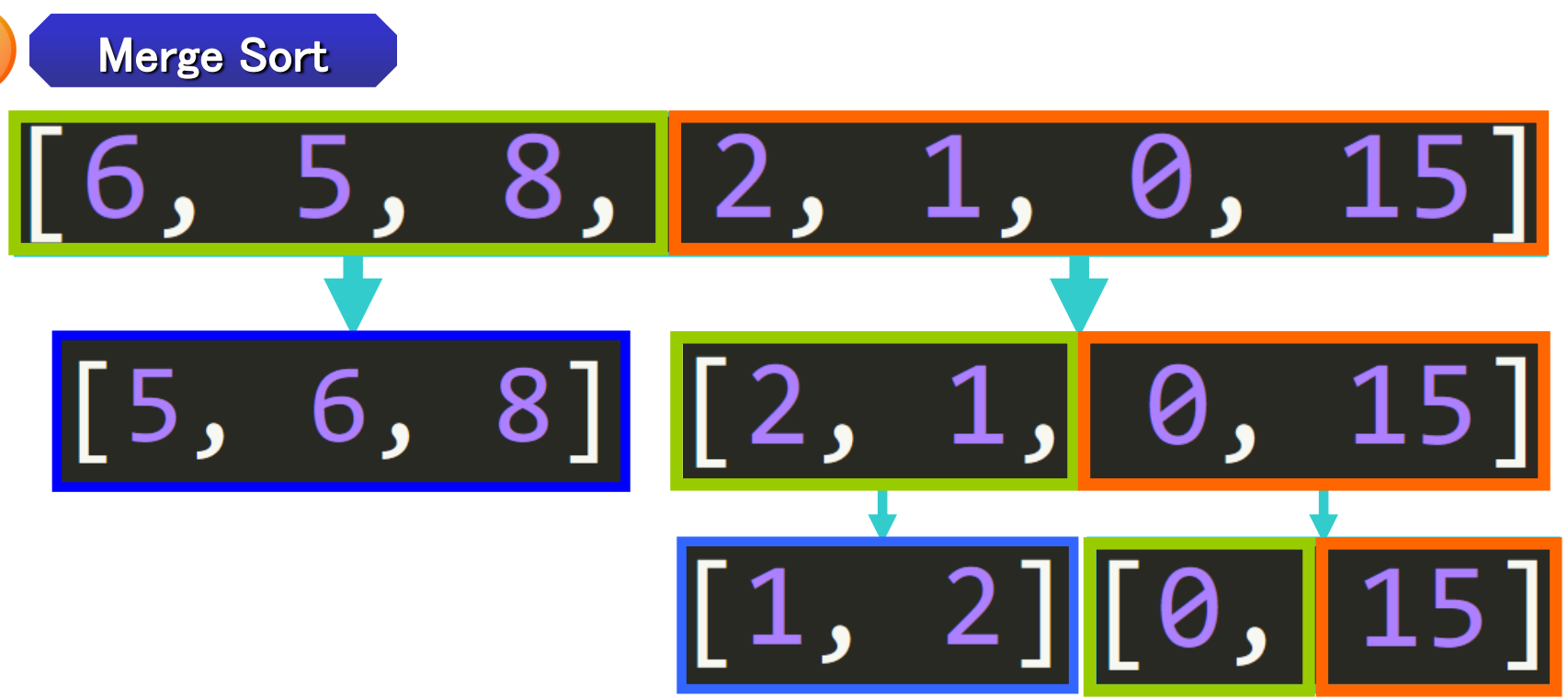
0, 15]
[1, 2]
[0, 15]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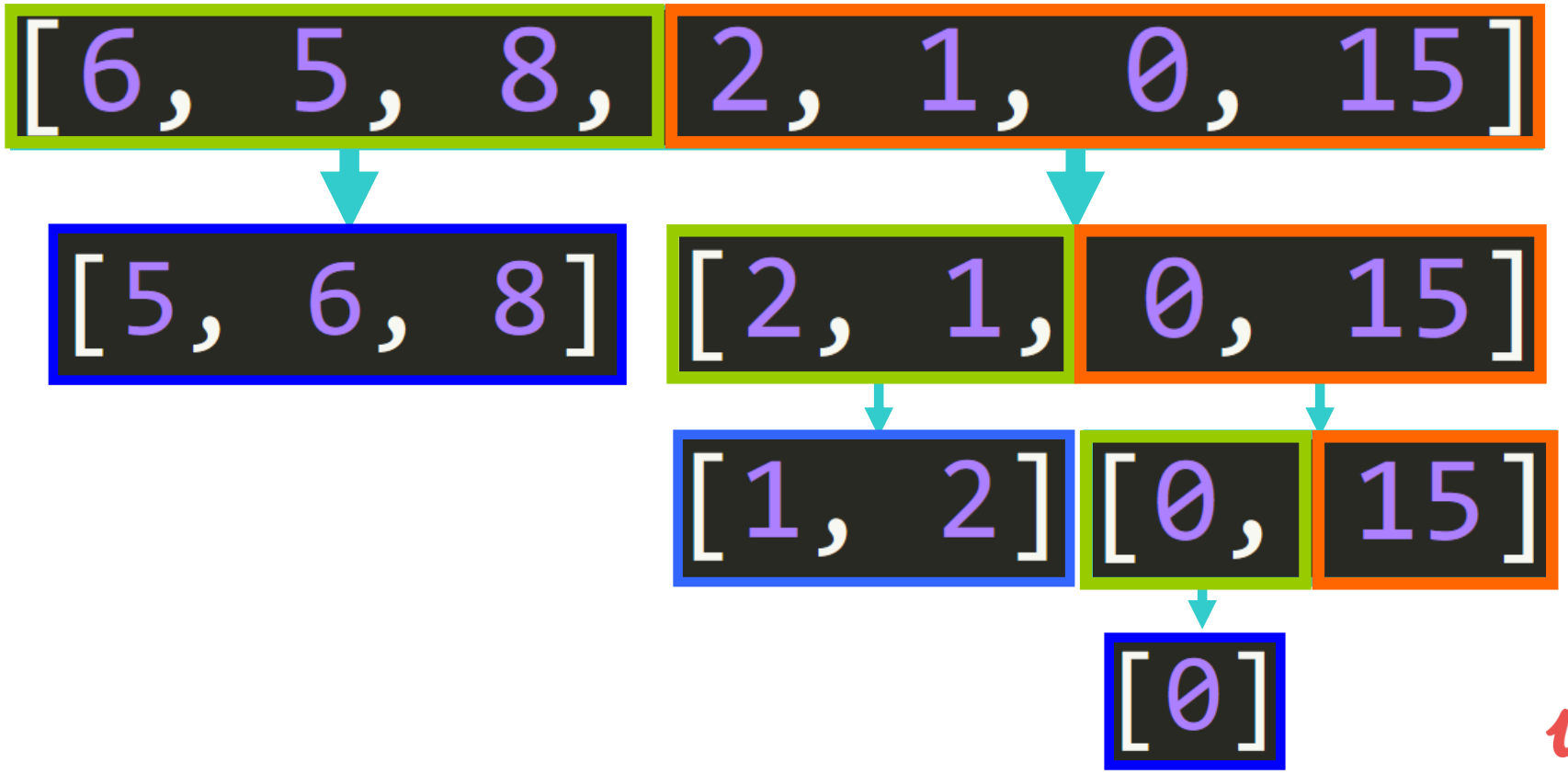

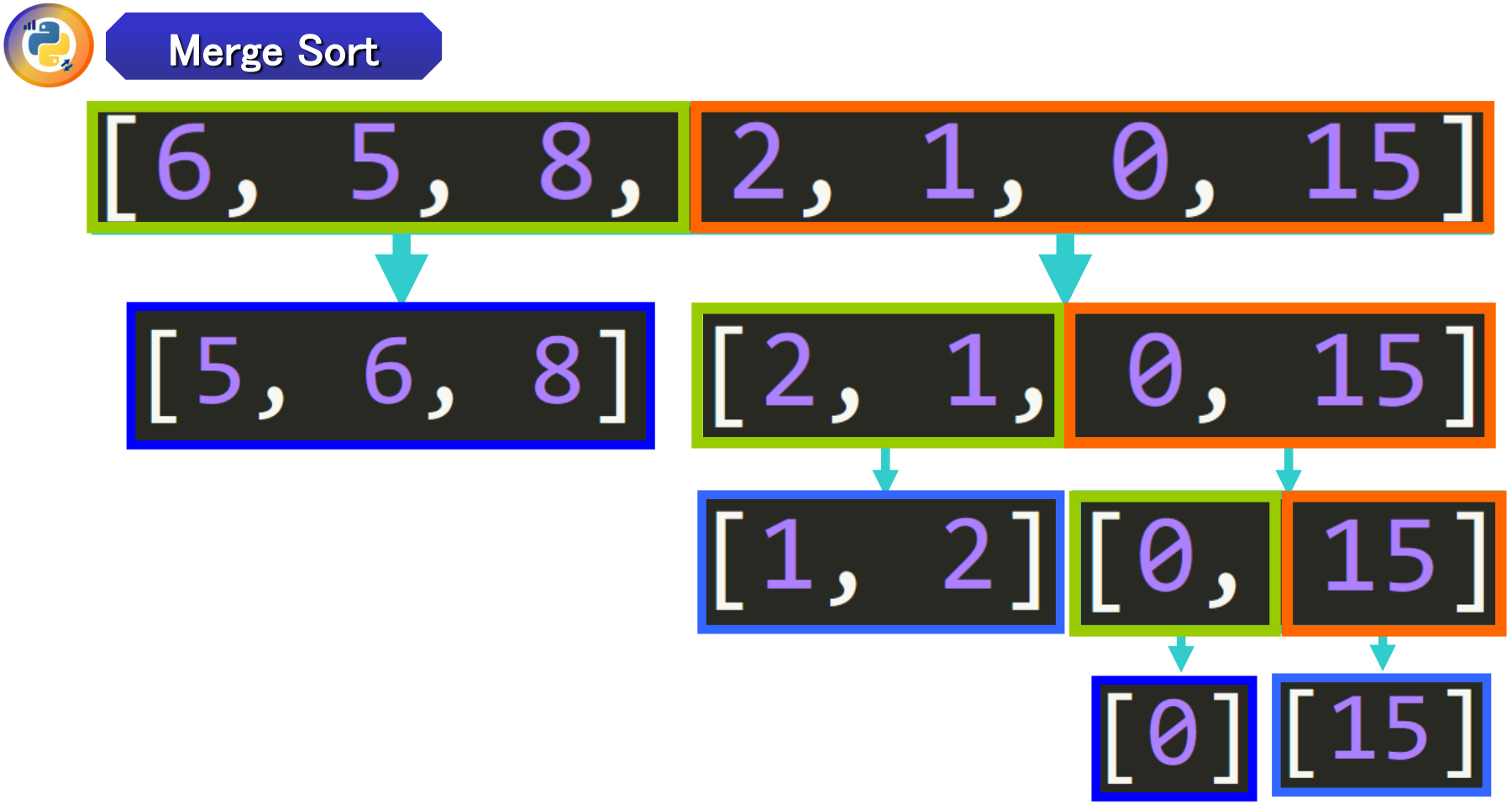
Merge Sort
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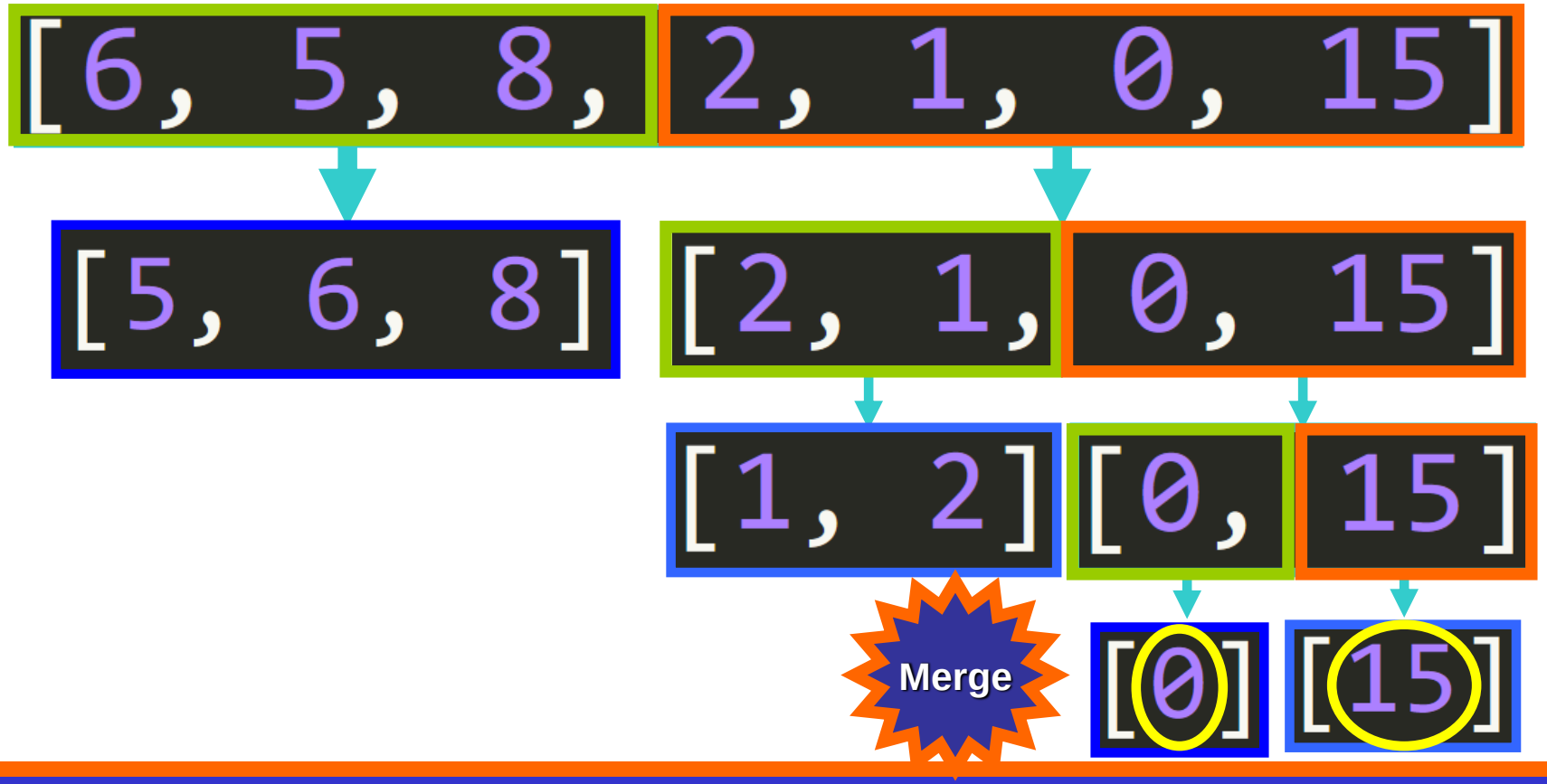
Merge Sort



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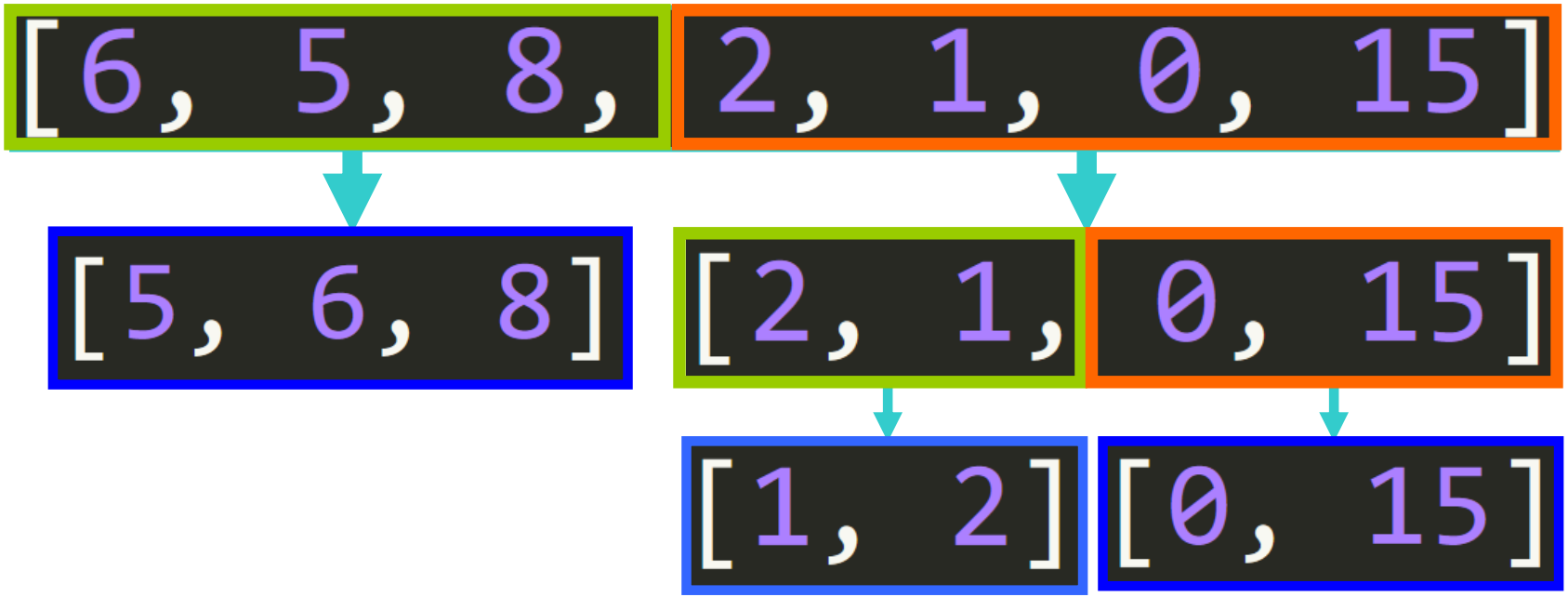

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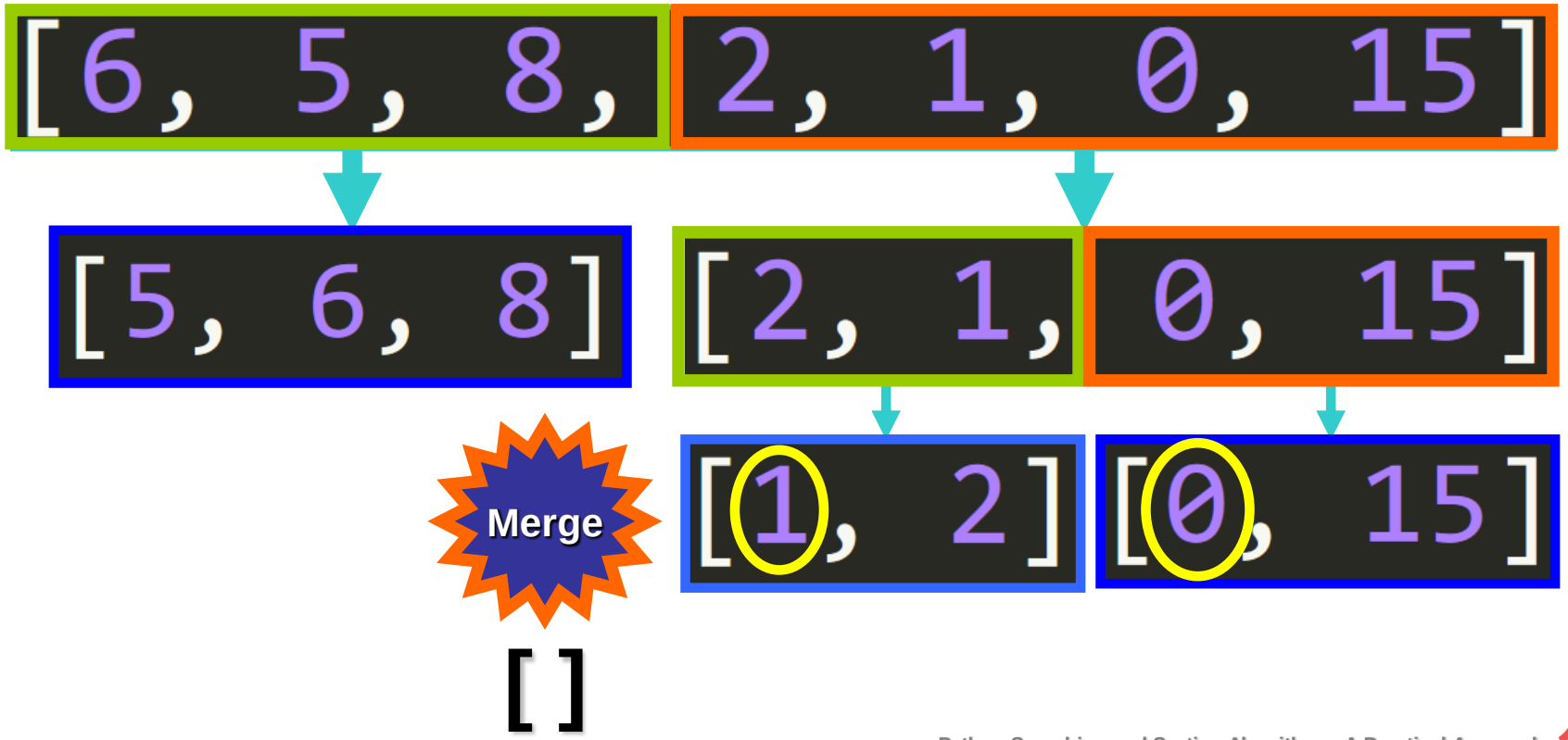

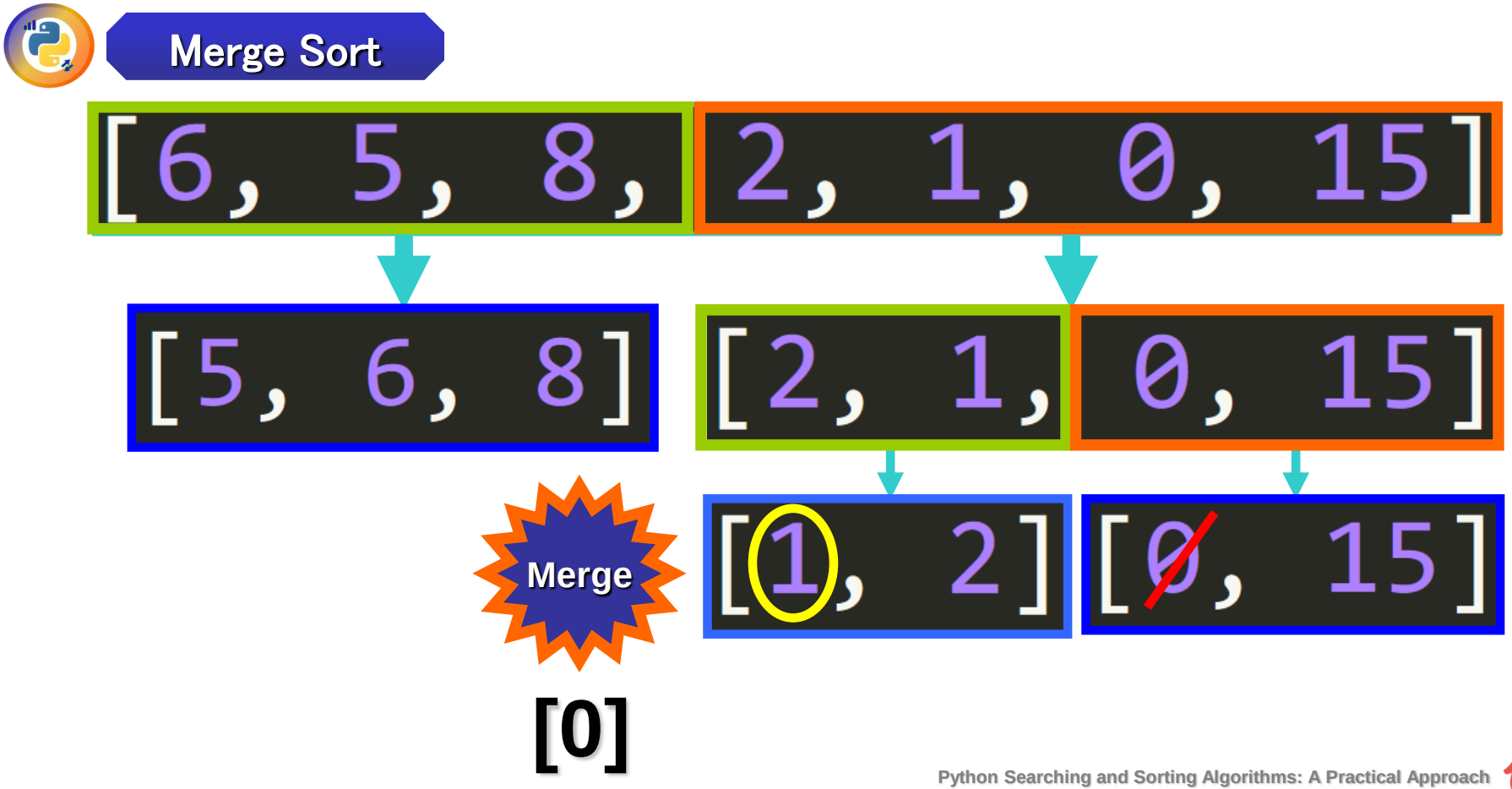
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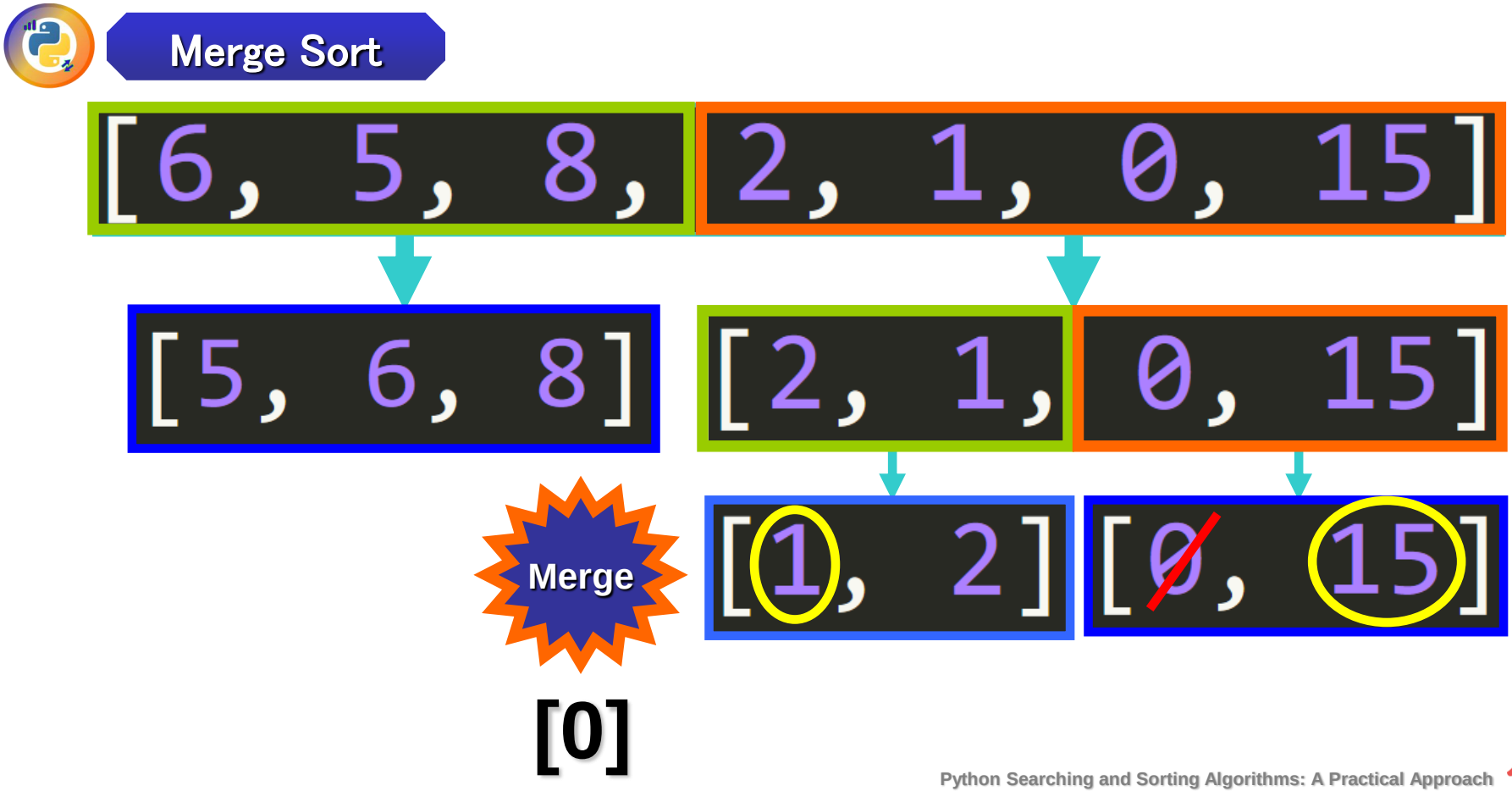
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Merge
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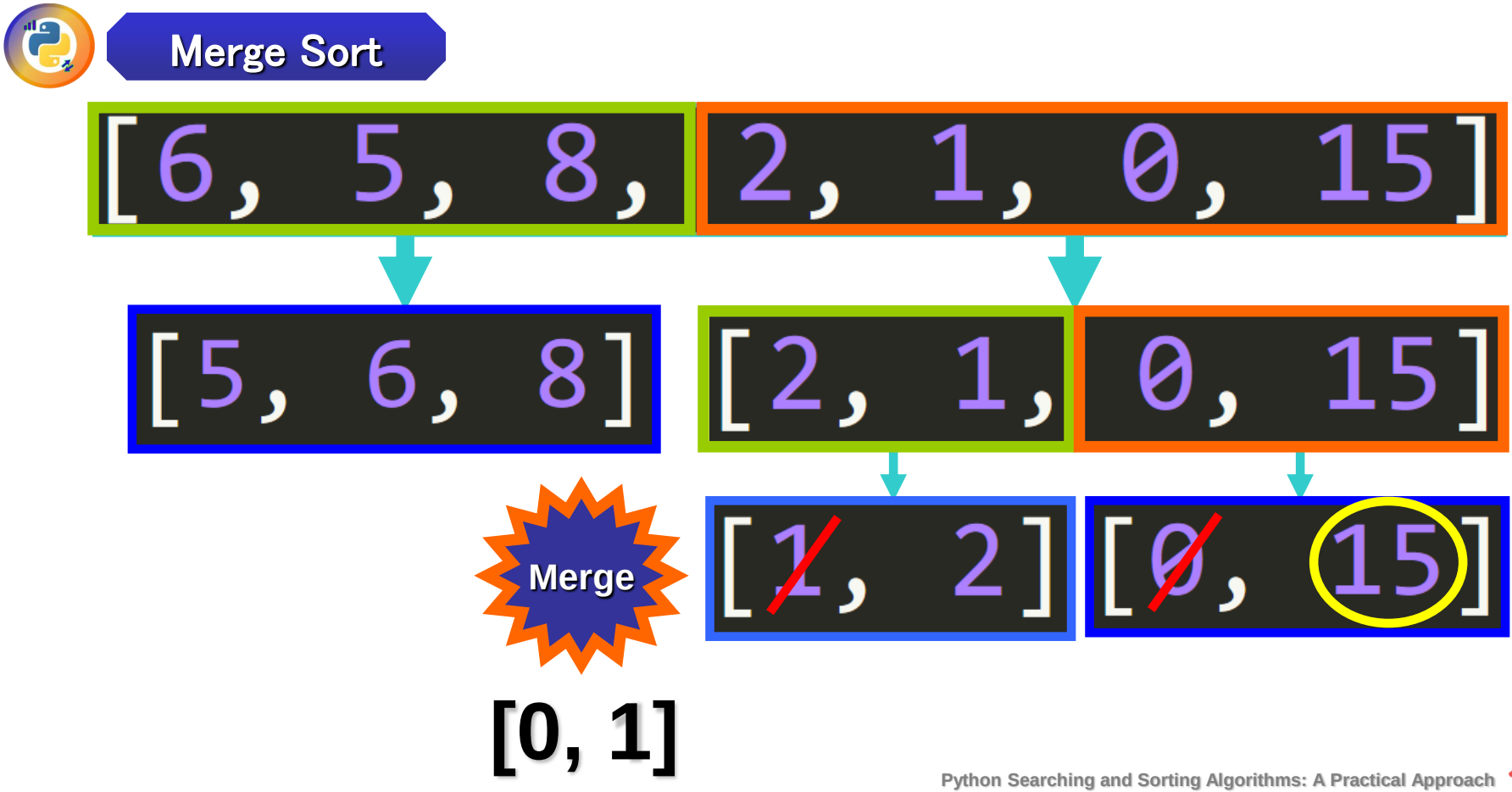
Merge Sort
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Merge
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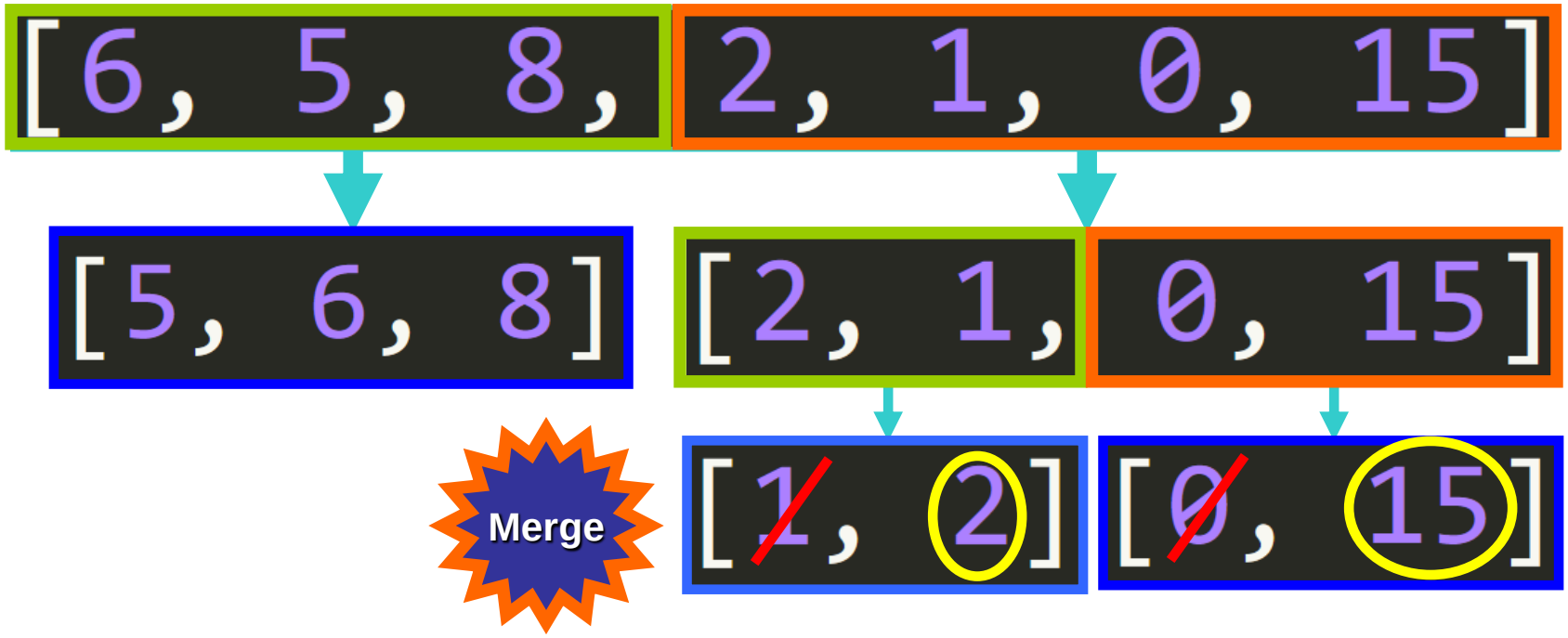
Merge Sort



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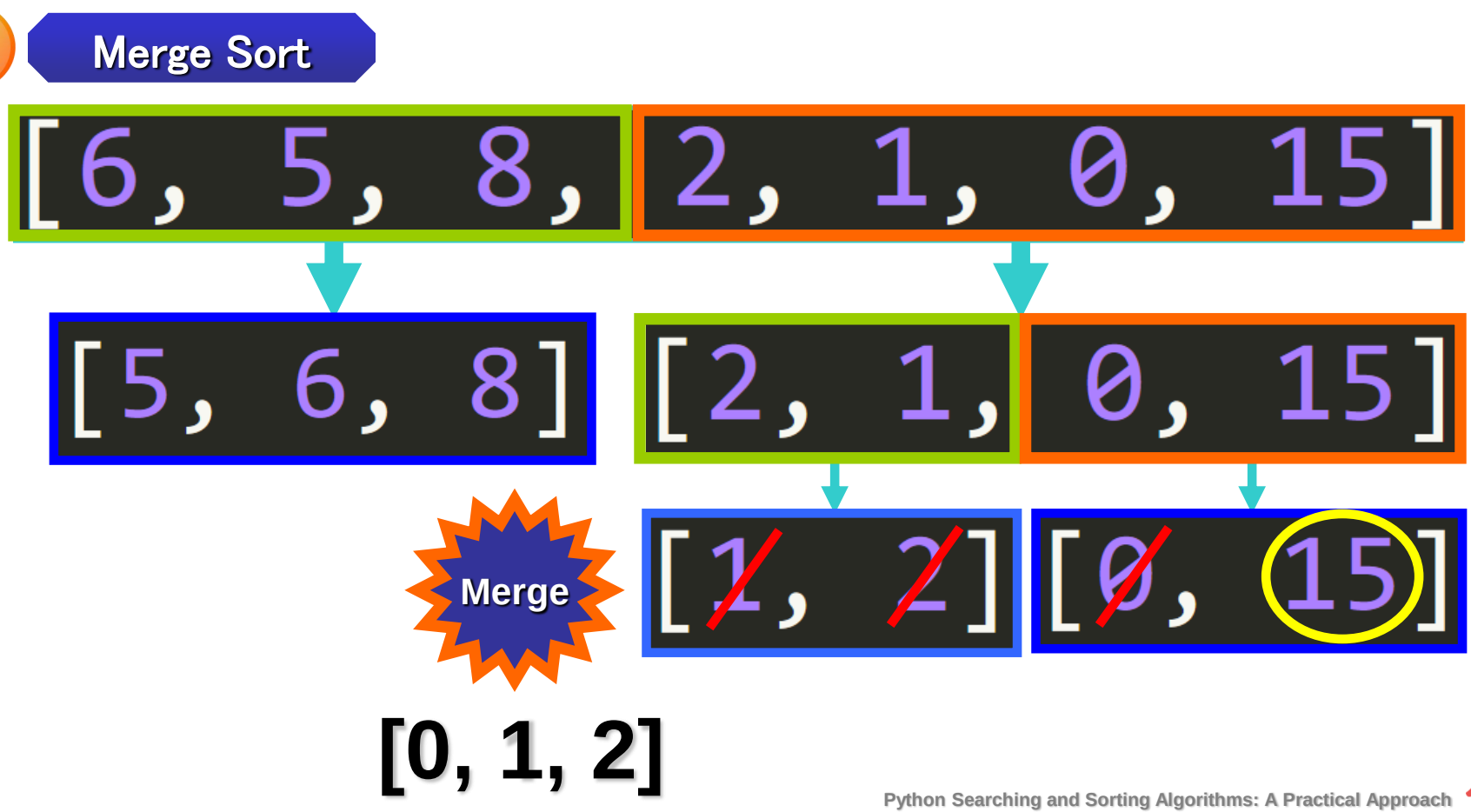
Merge Sort
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Merge
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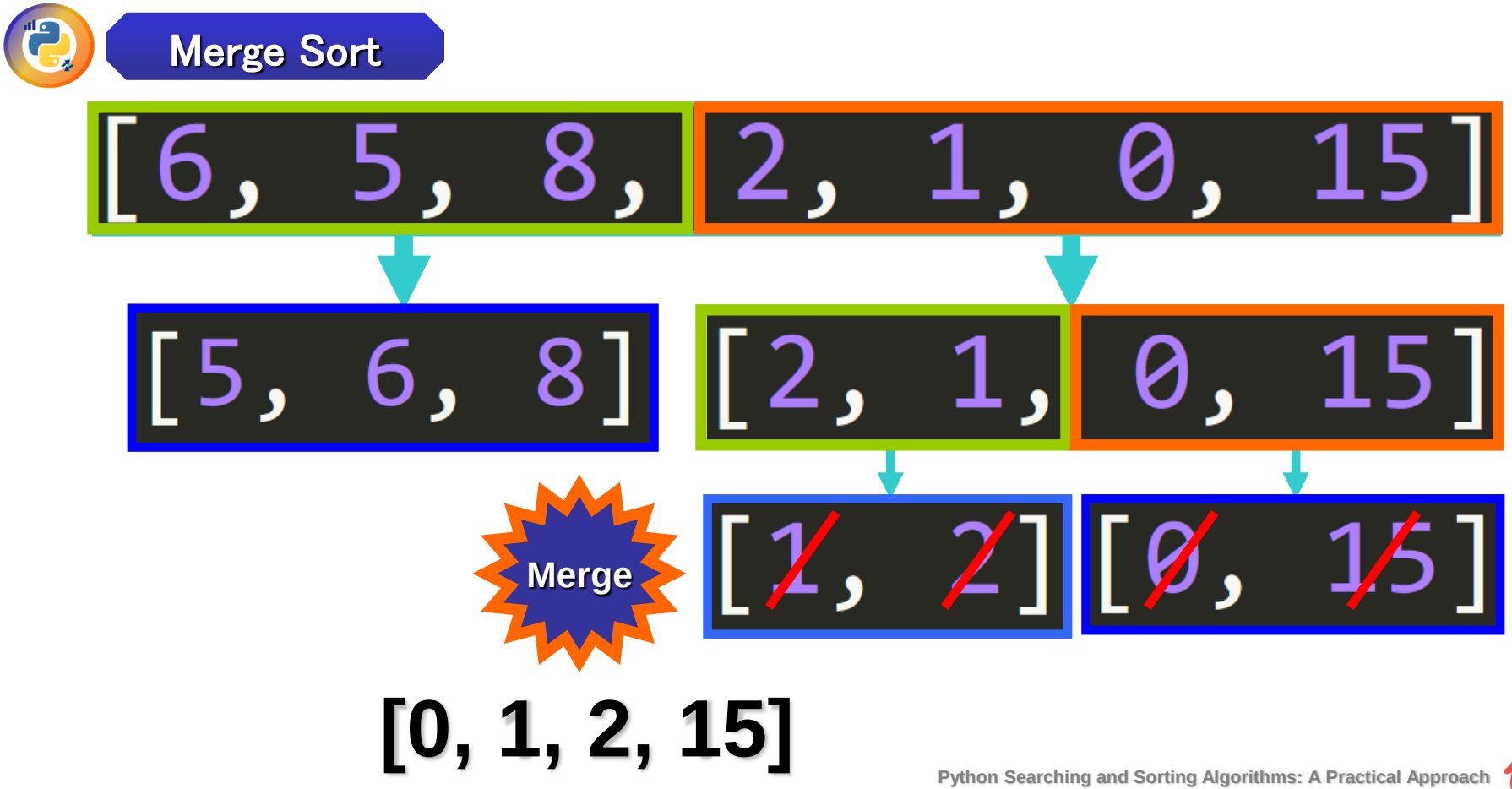
Merge Sort
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Merge
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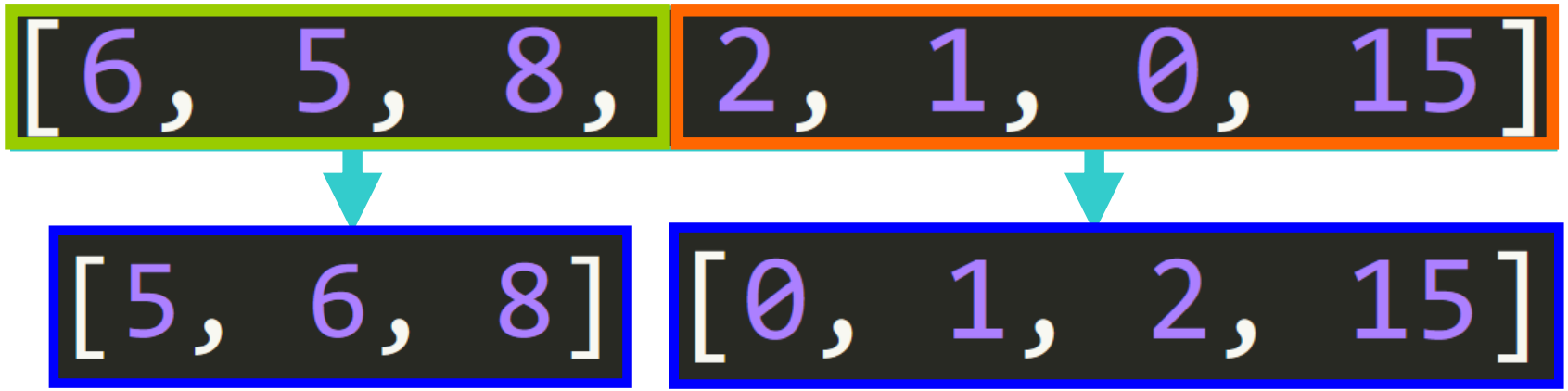
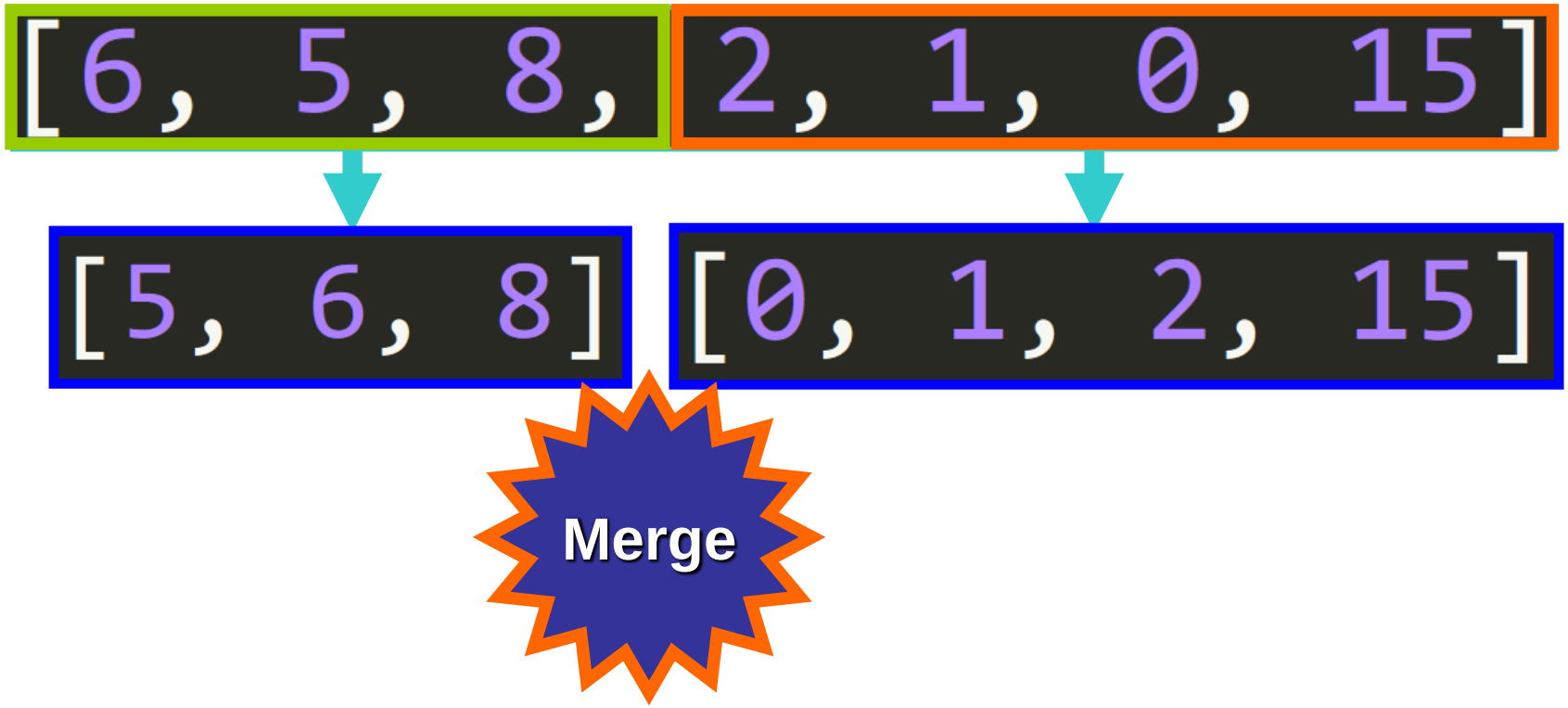
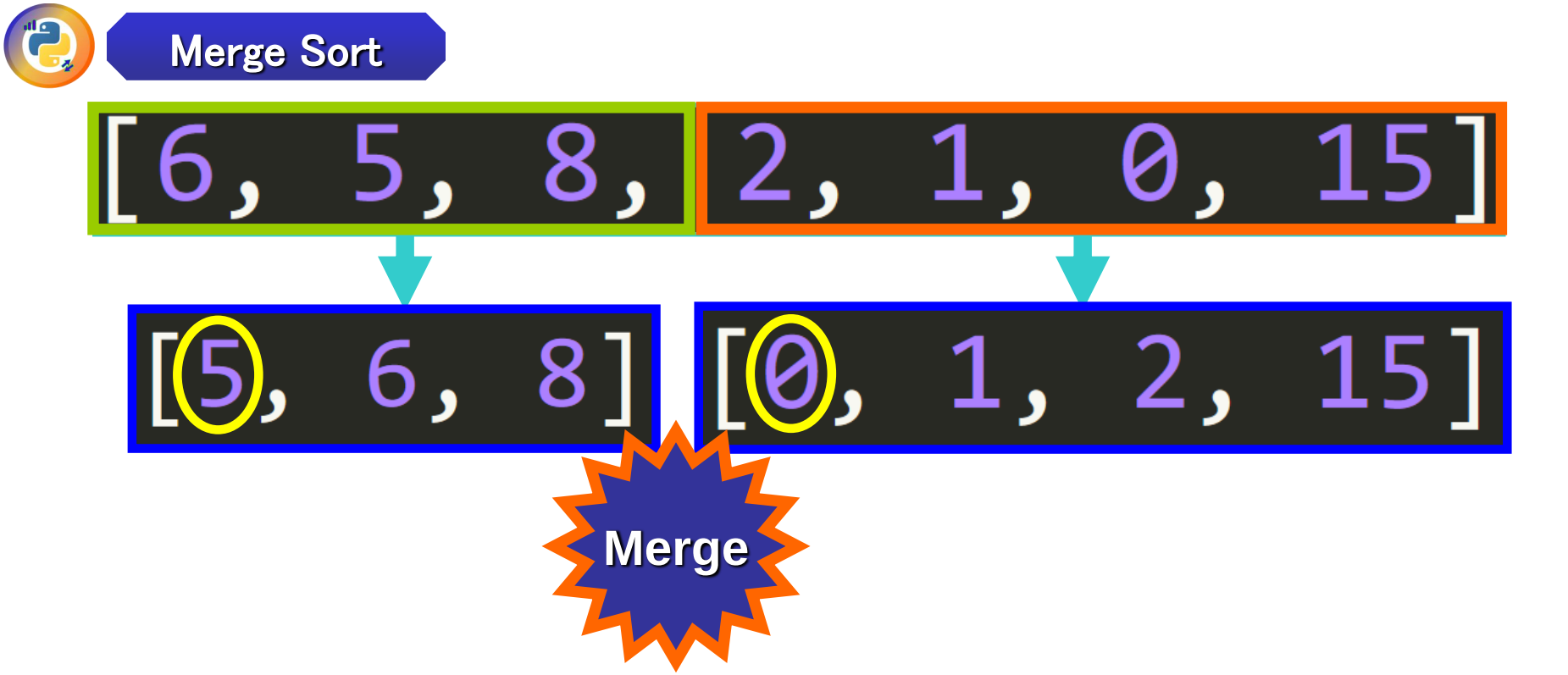
Merge Sort



Merge Sort




Merge Sort
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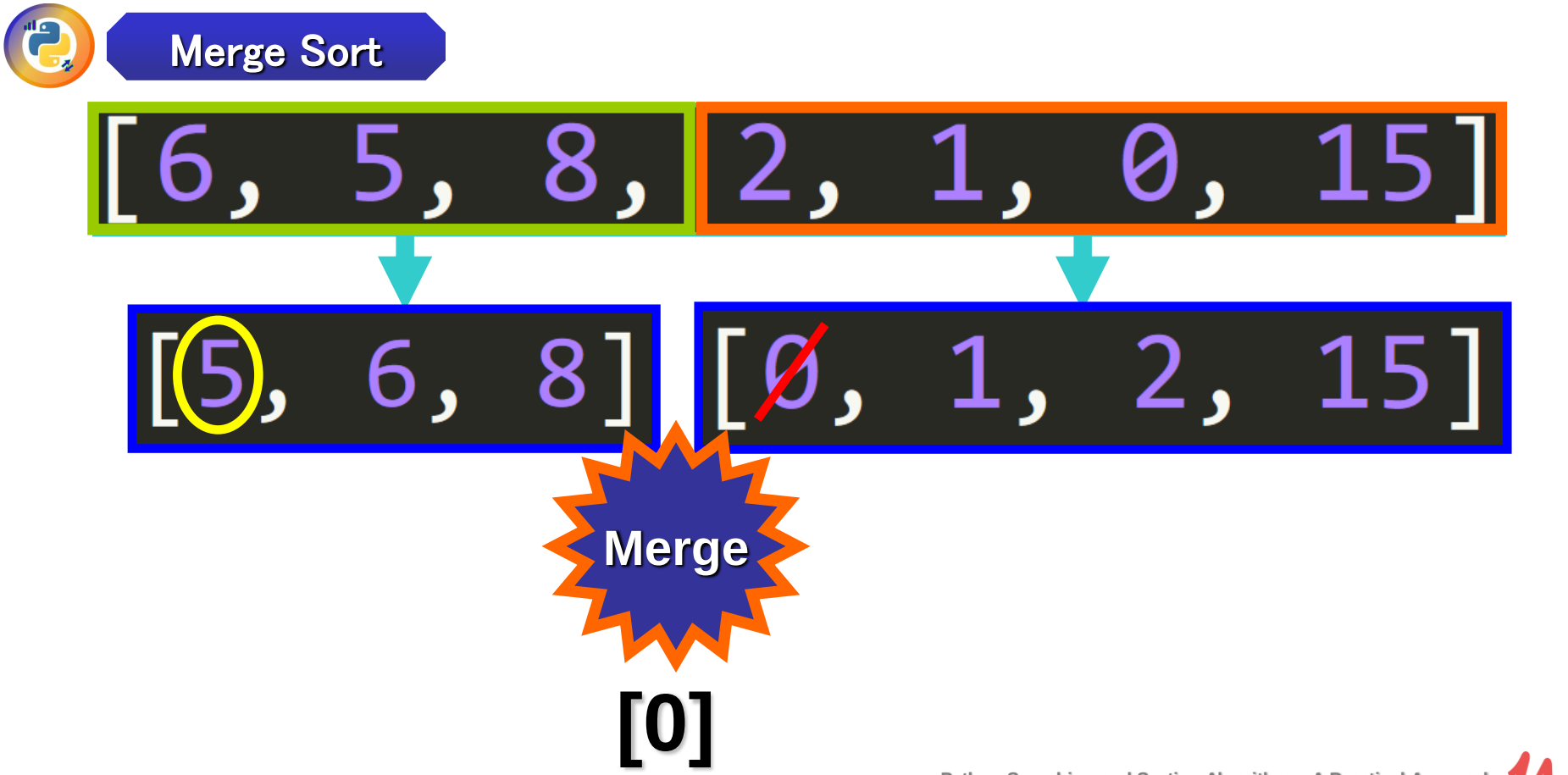
Merge


Merge Sort
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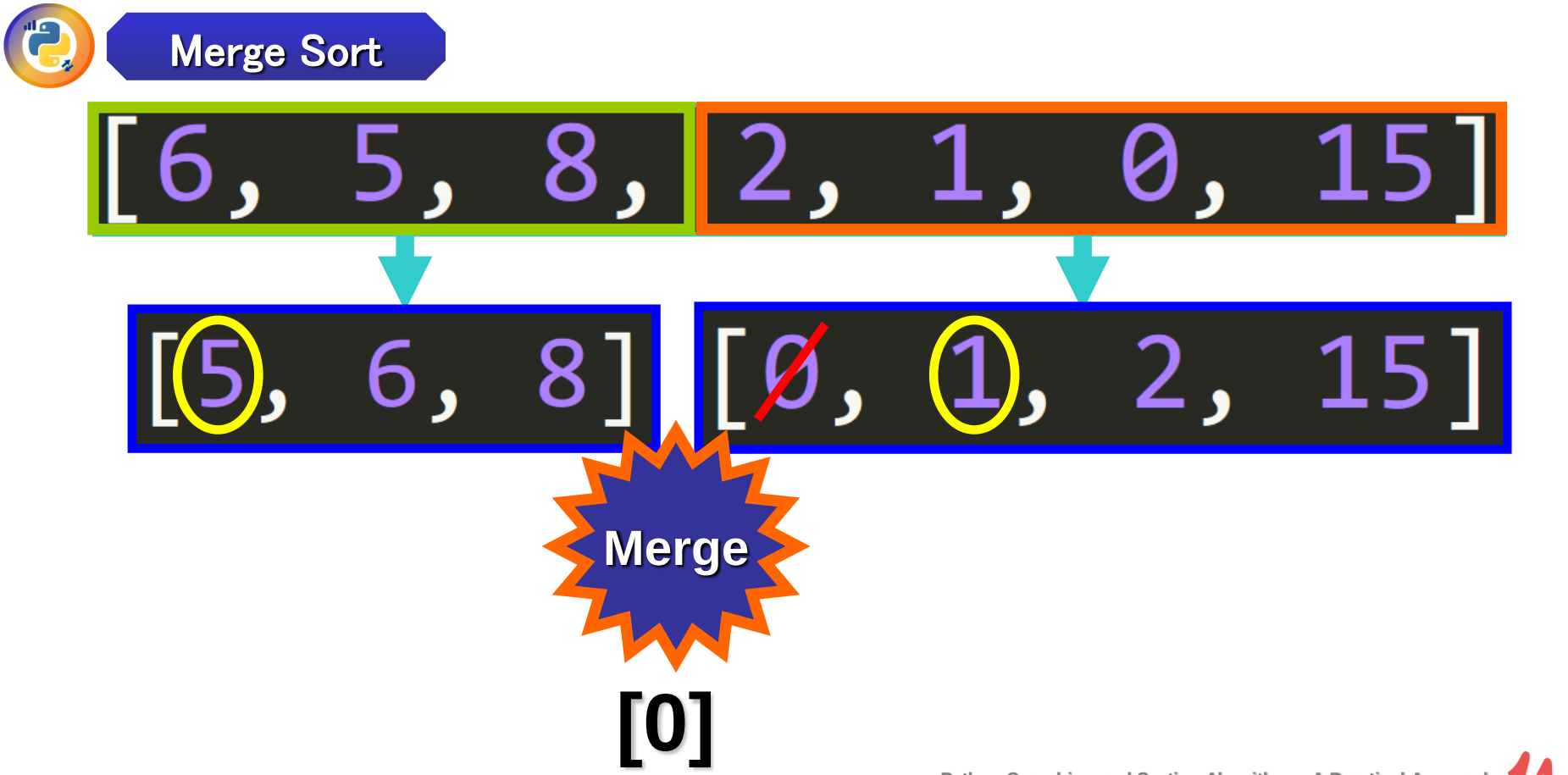
Merge Sort
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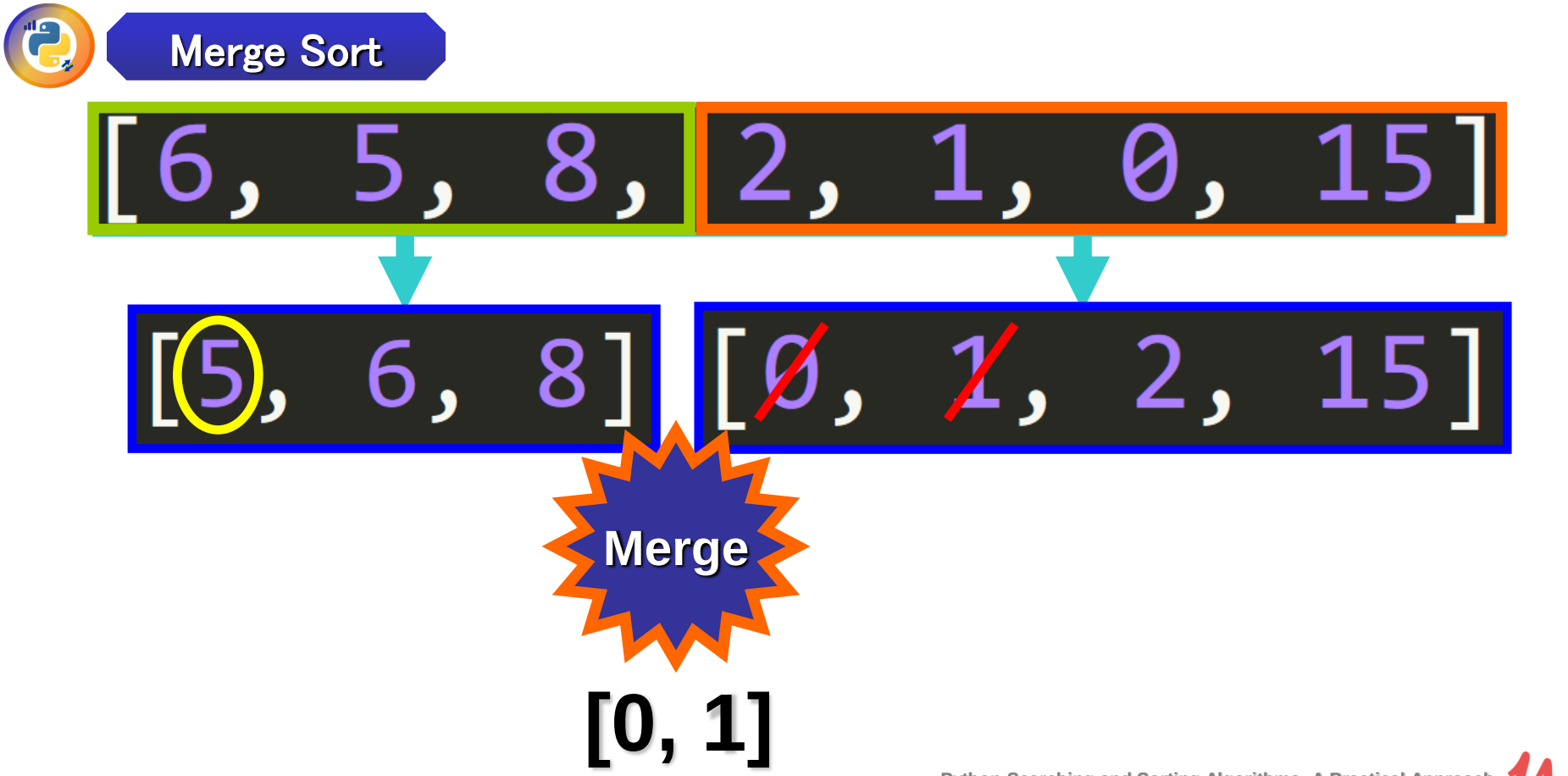
Merge Sort
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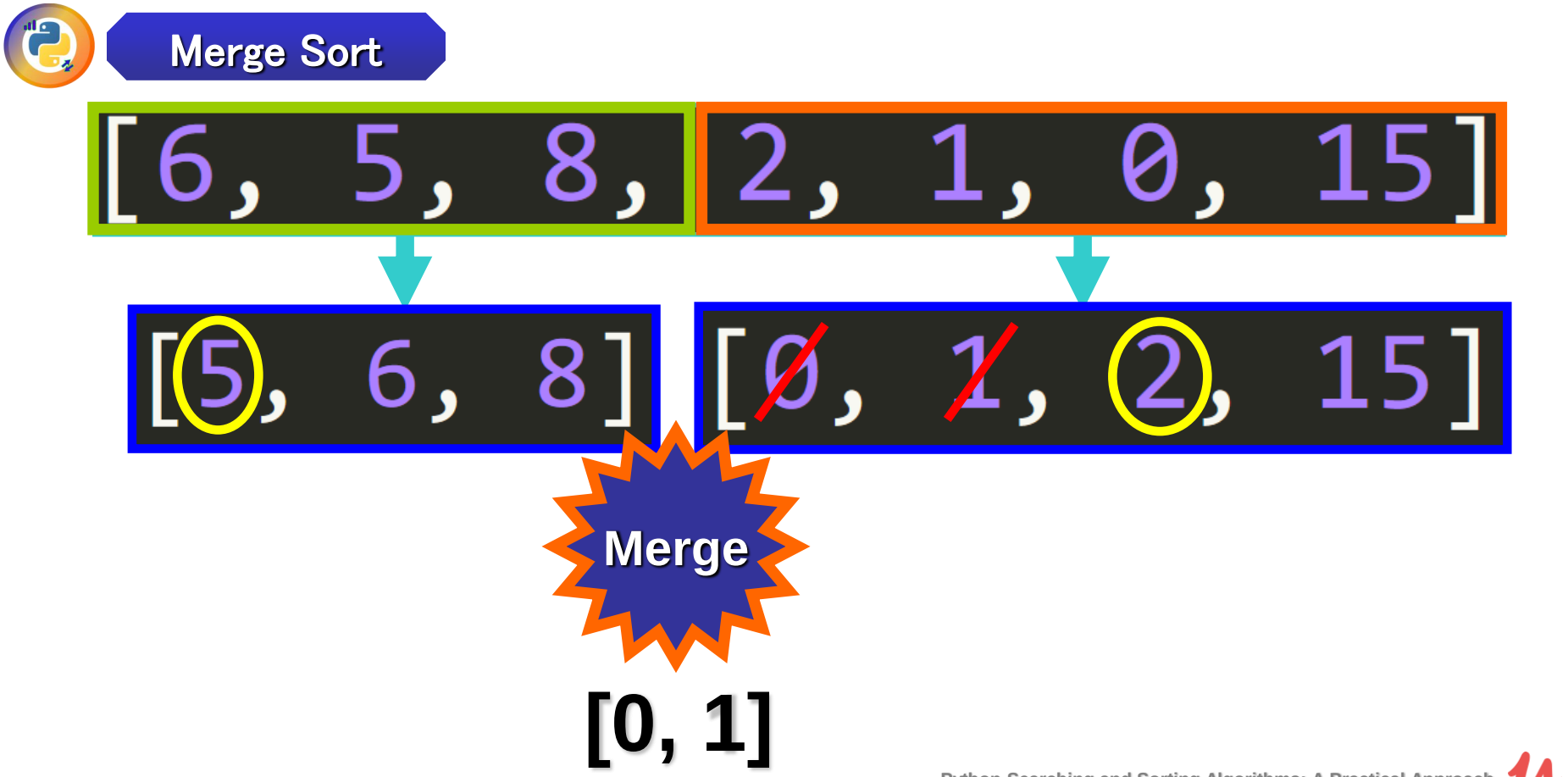
Merge Sort
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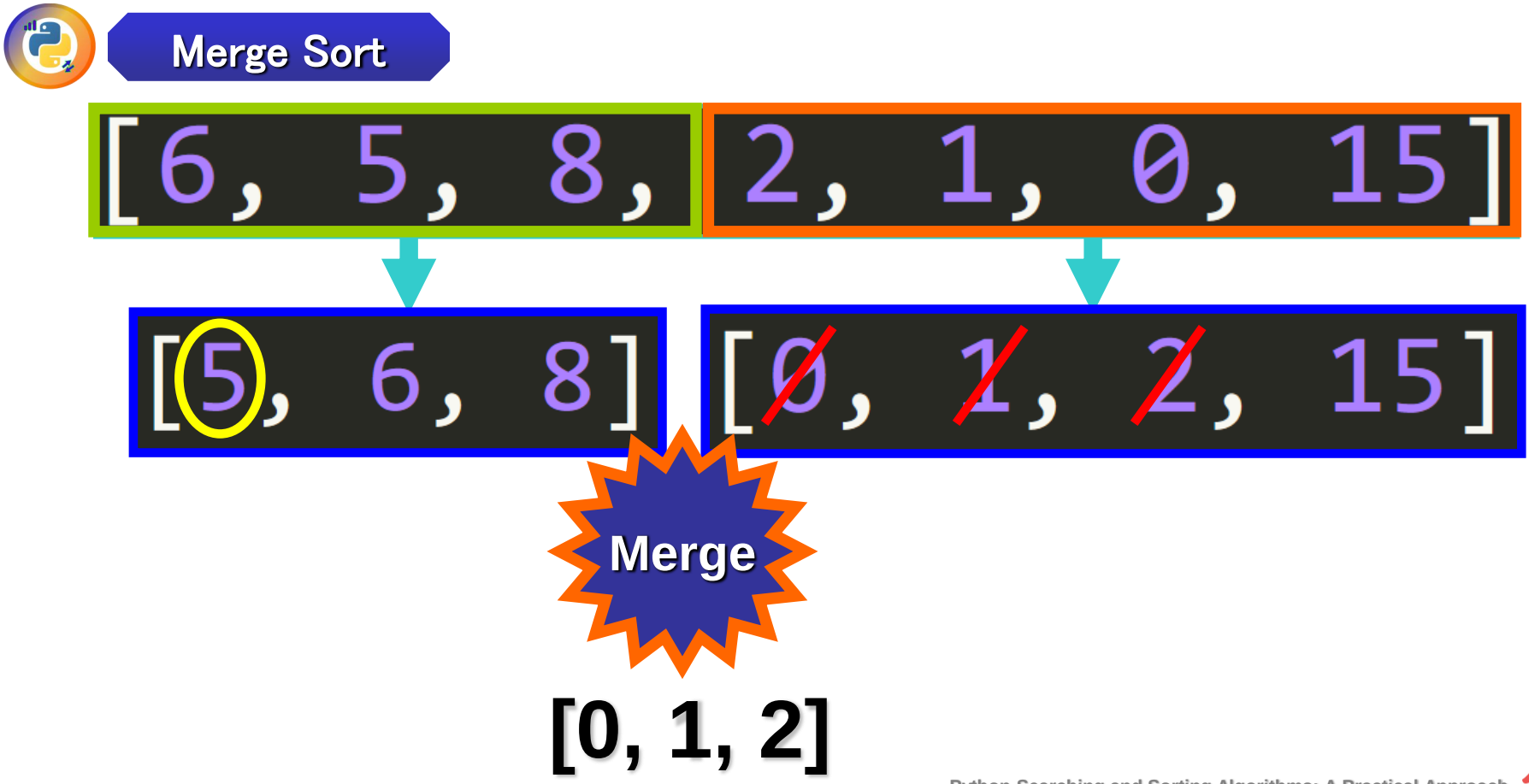
Merge Sort
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[0, 1, 2, 15]
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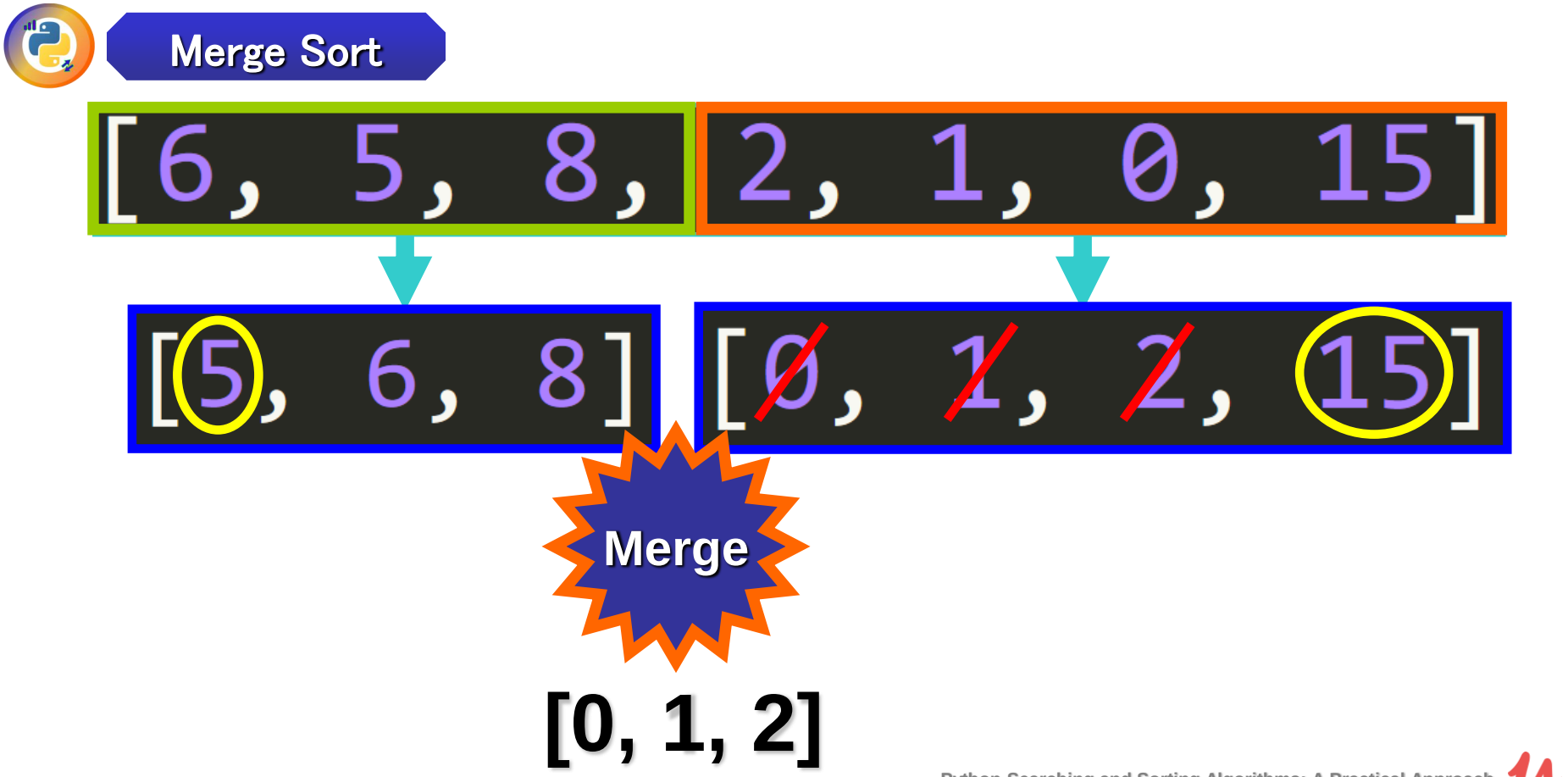
Merge Sort
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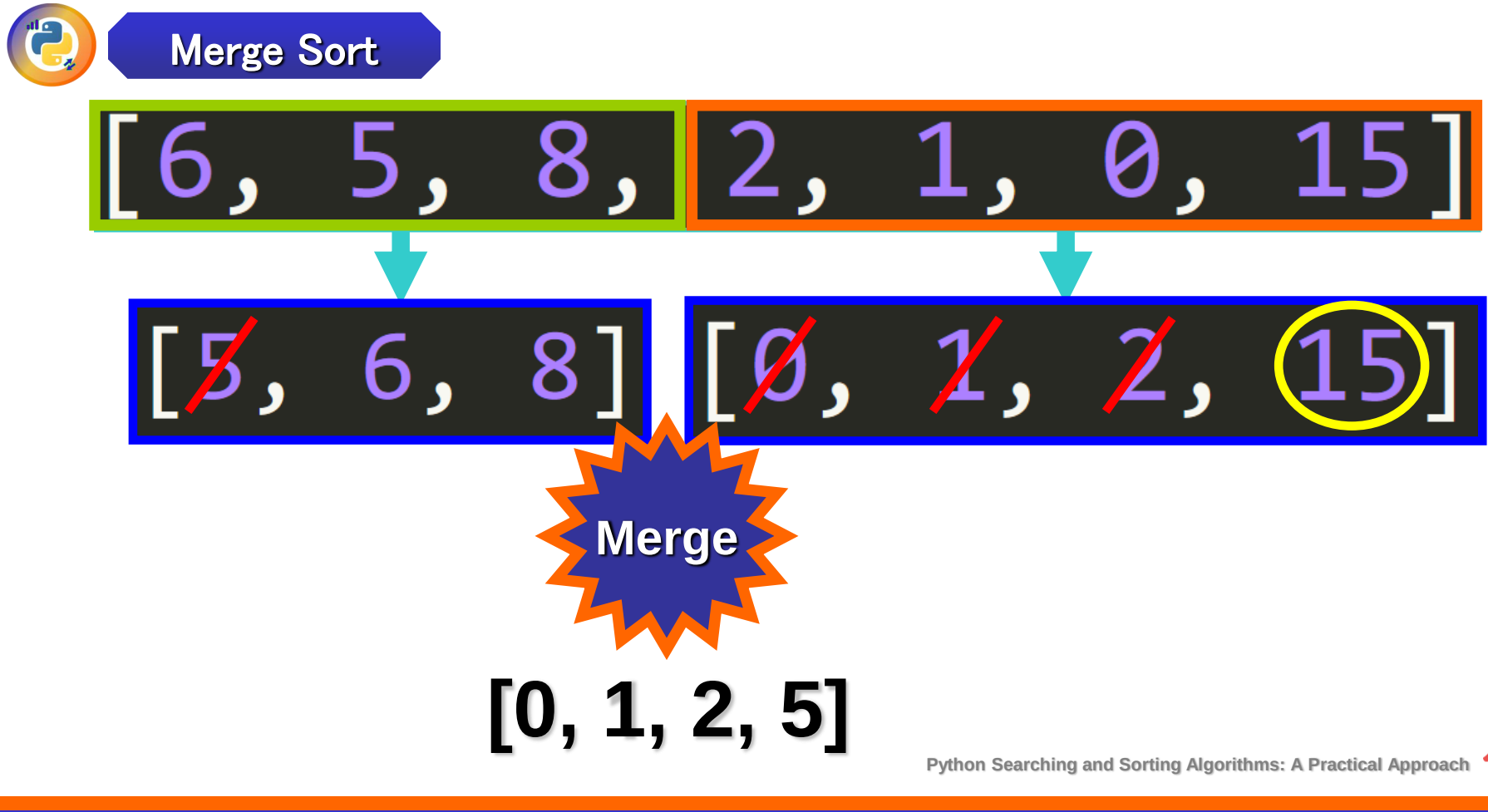
Merge
[0, 1, 2]


Merge Sort
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Merge
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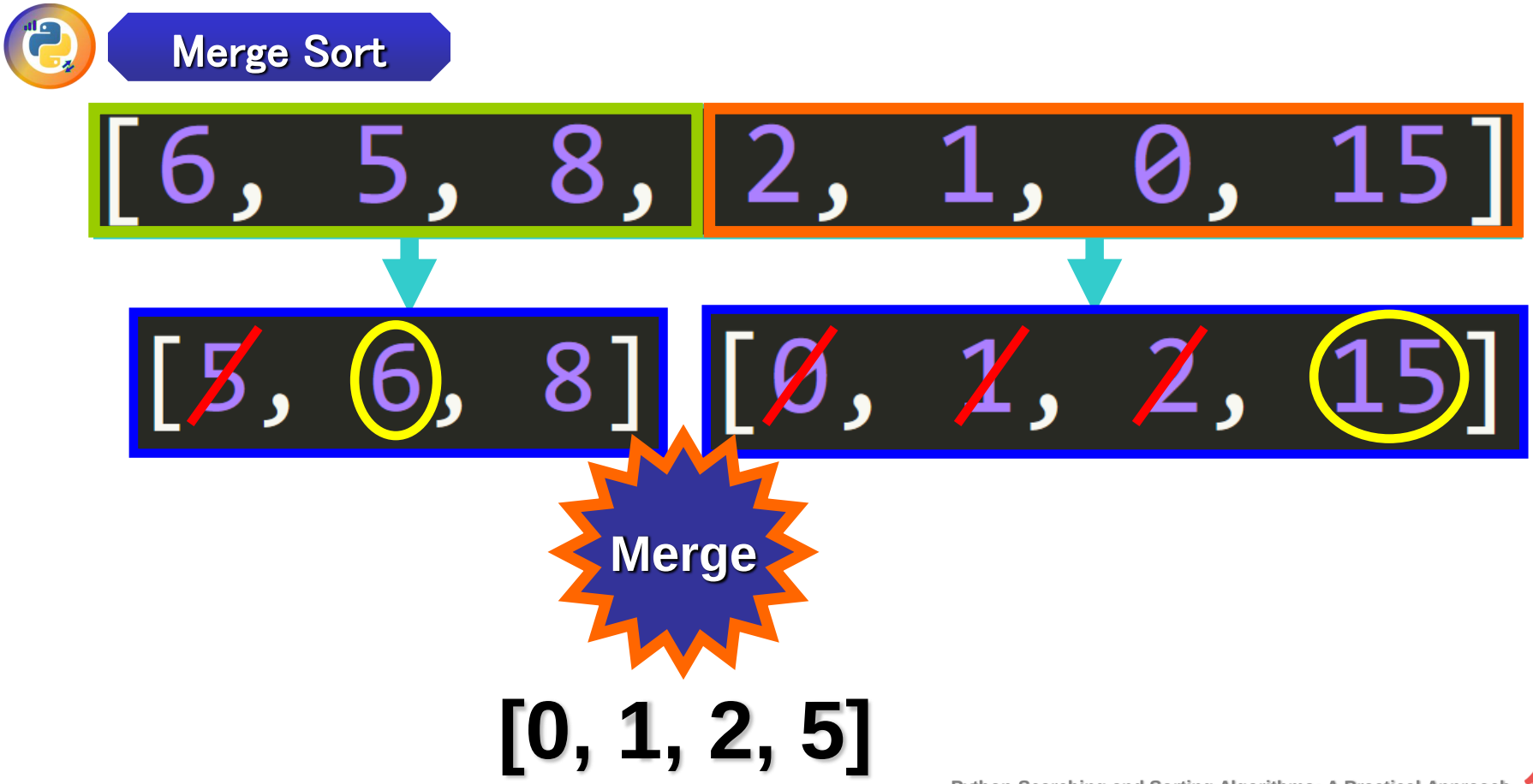
Merge Sort
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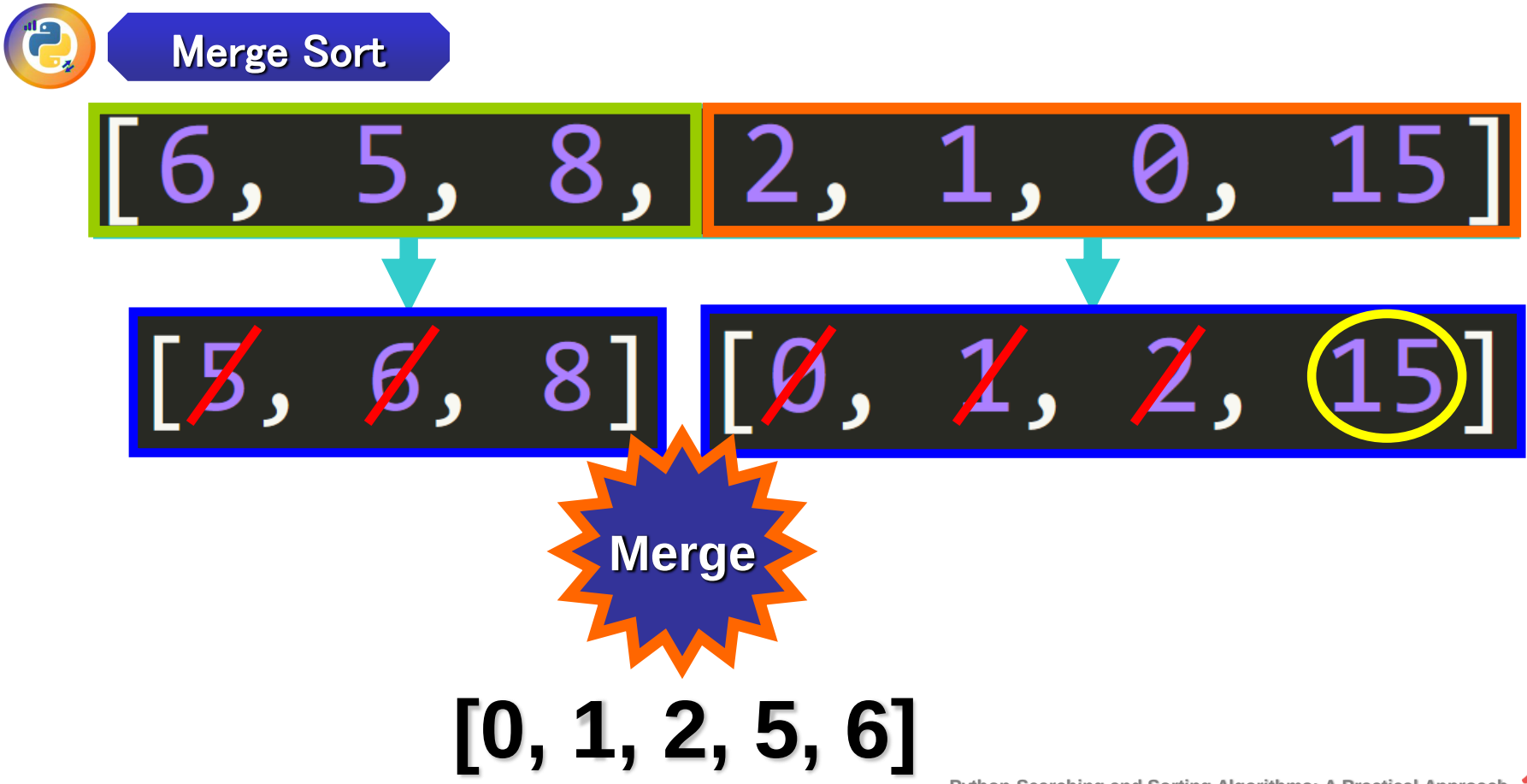
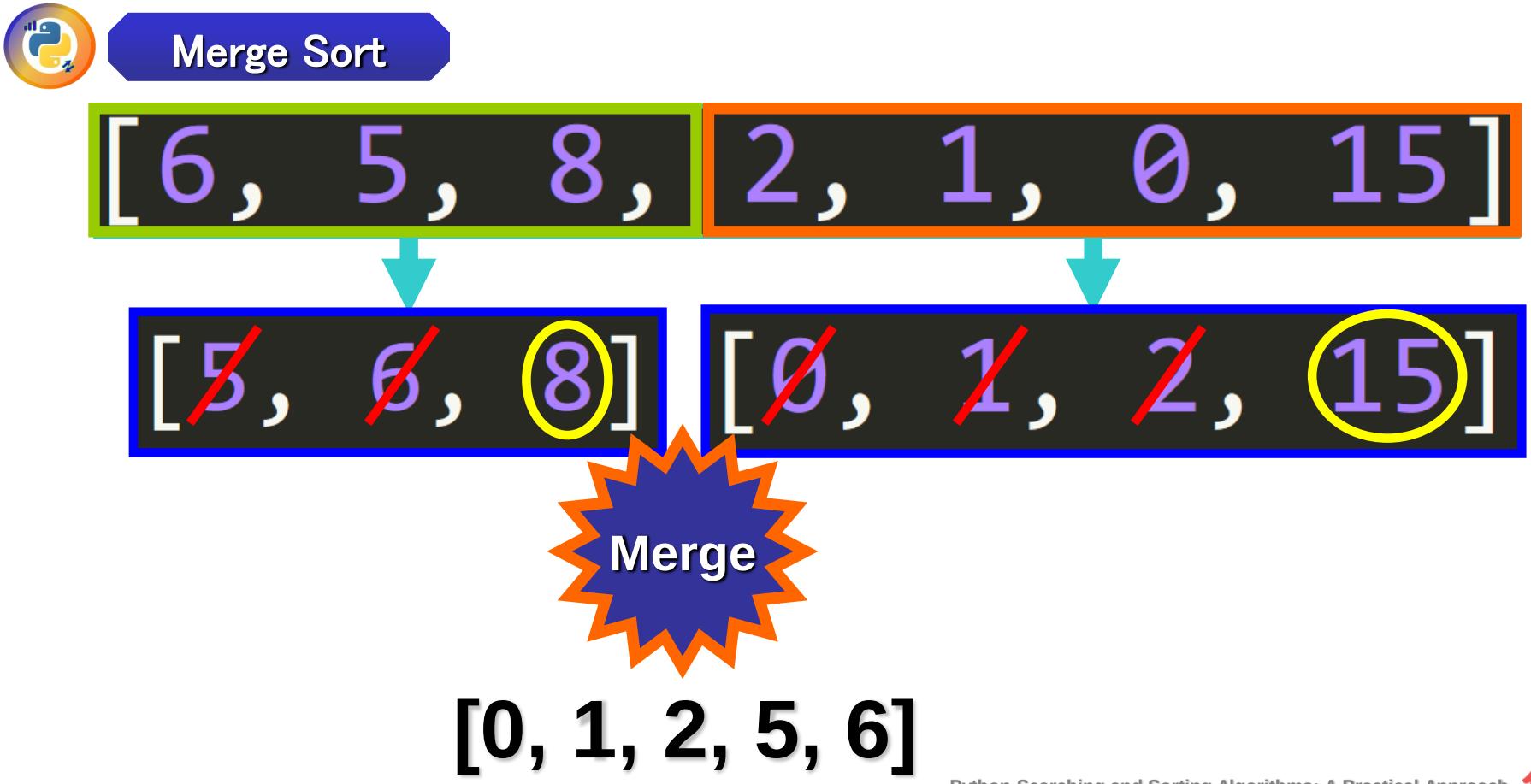
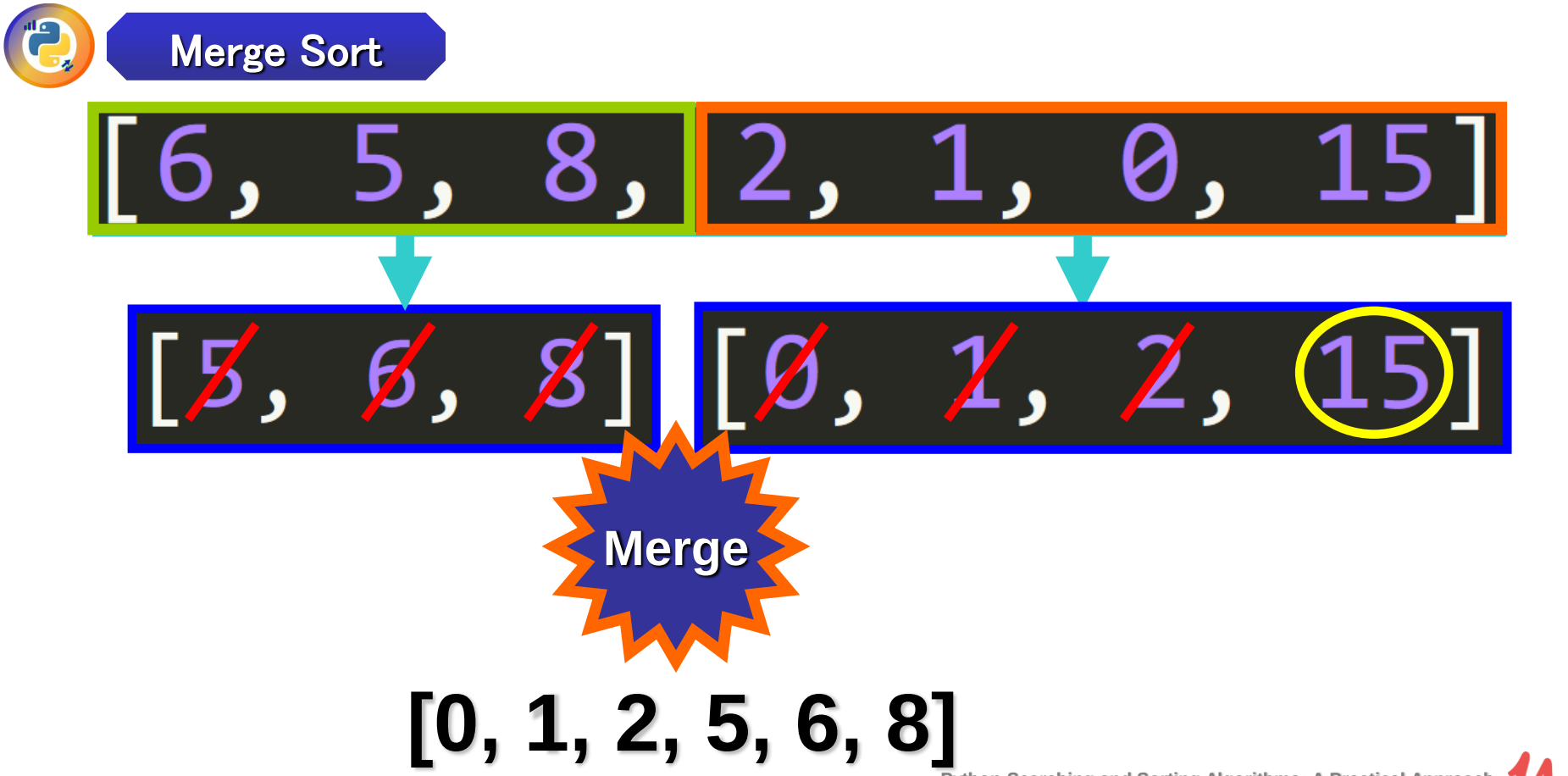
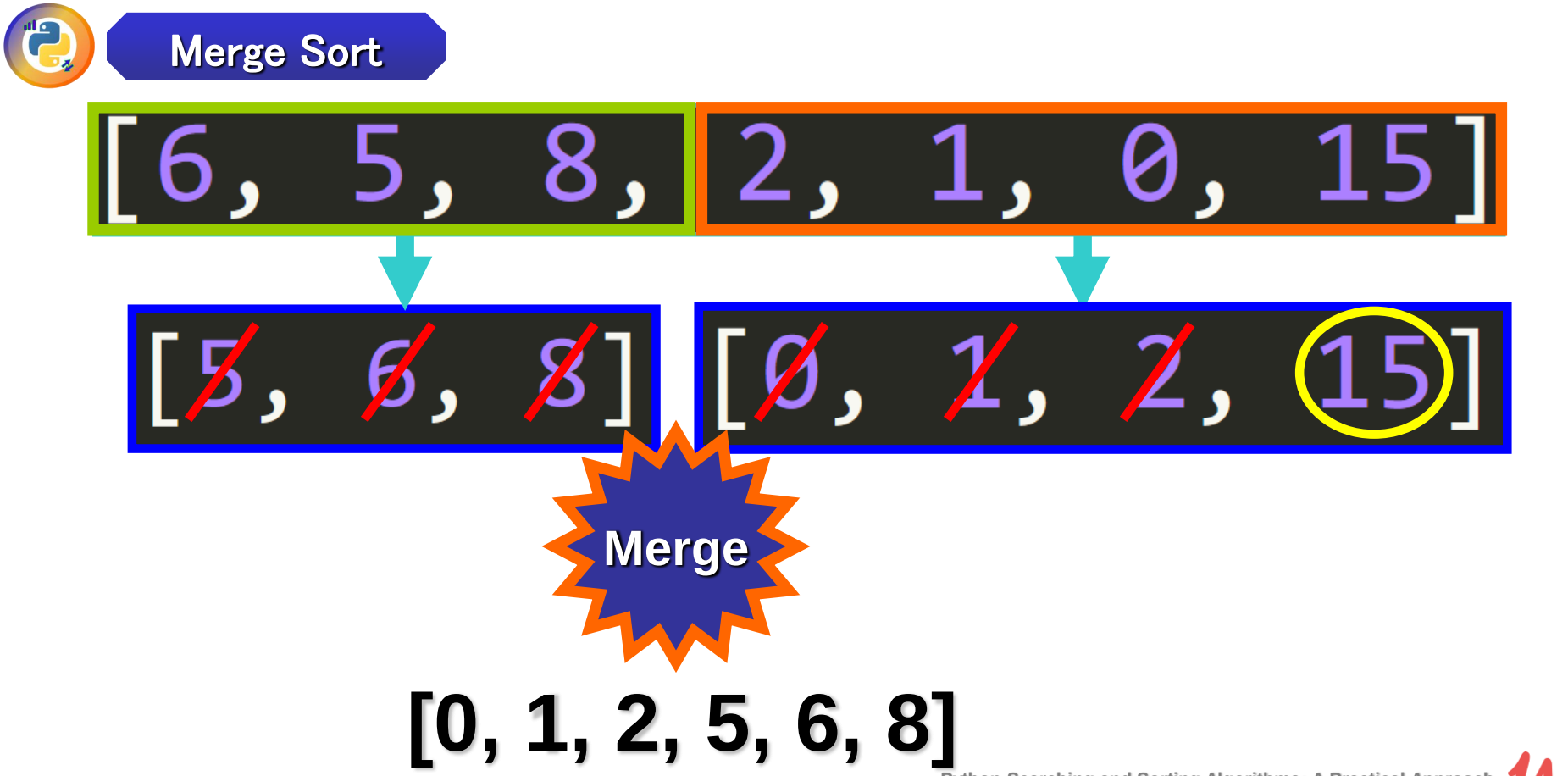
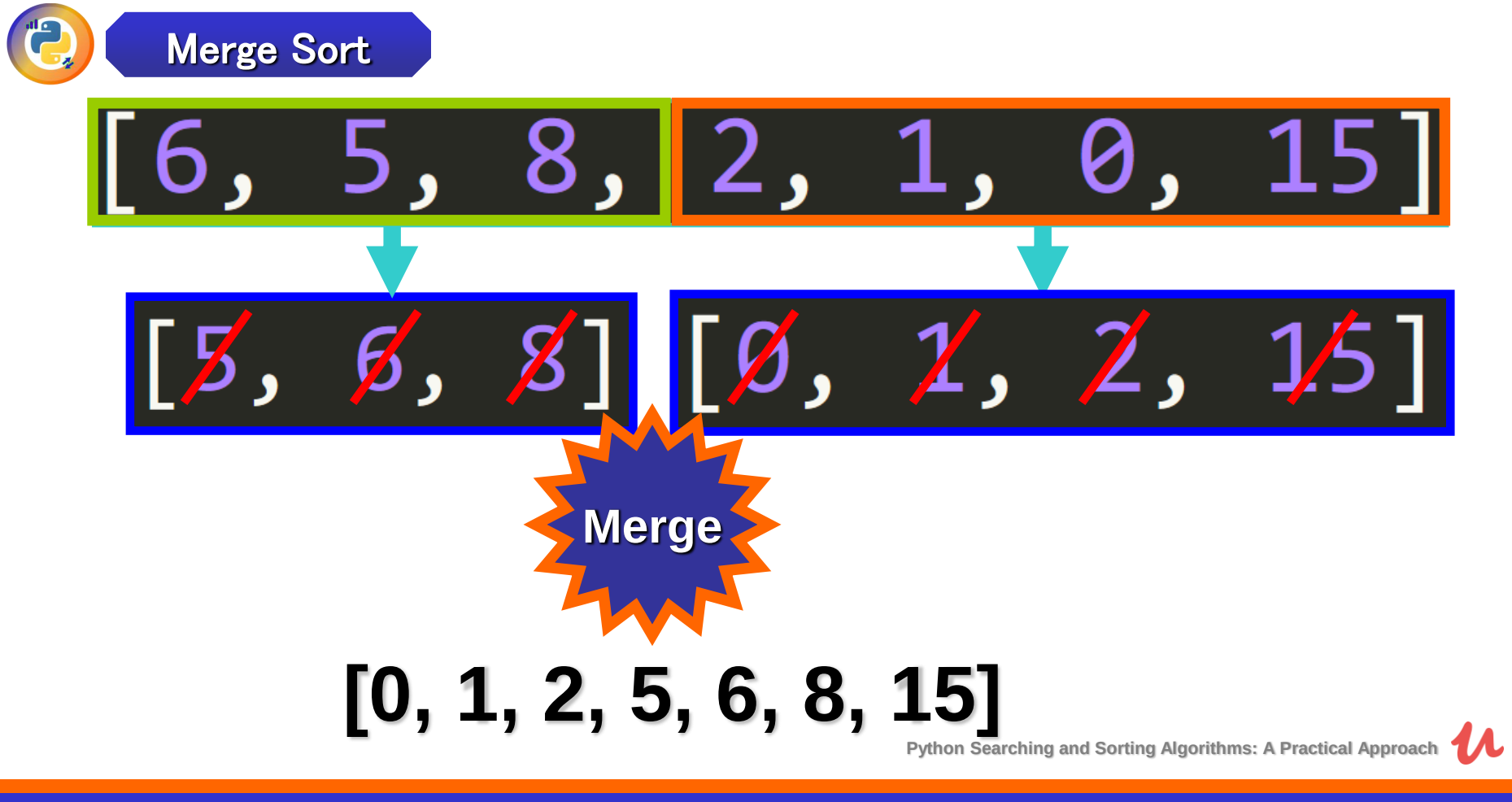
Merge
[0, 1, 2, 5]


Merge Sort
[6, 5, 8,
2, 1, 0, 15]
[5, 6, 8]
[0, 1, 2, 15]
Merge
[0, 1, 2, 5, 6]


Merge Sort
[6, 5, 8,
2, 1, 0, 15]
[5, 6, 8]
[0, 1, 2, 15]
Merge
[0, 1, 2, 5, 6]


Merge Sort
[6, 5, 8,
2, 1, 0, 15]
[5, 6, 8]
[0, 1, 2, 15]
Merge
[0, 1, 2, 5, 6, 8]


Merge Sort
[6, 5, 8,
2, 1, 0, 15]
[5, 6, 8]
[0, 1, 2, 15]
Merge
[0, 1, 2, 5, 6, 8]


Merge Sort
[6, 5, 8,
2, 1, 0, 15]
[5, 6, 8]
[0, 1, 2, 15]
Merge
[0, 1, 2, 5, 6, 8, 15]

Merge Sort

```
[0, 1, 2, 5, 6, 8, 15]
```

To the Code!