Algorithm

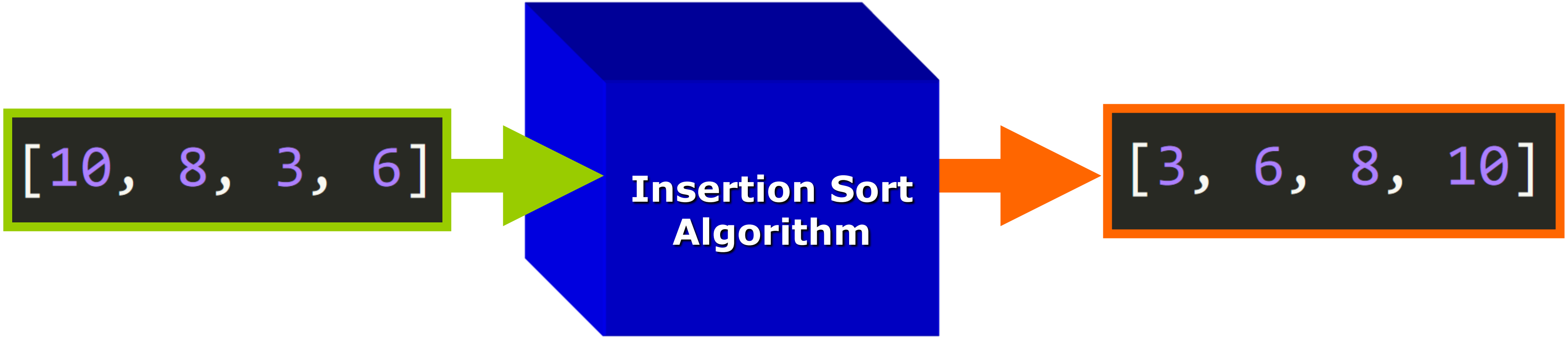
Insertion Sort

Visual Walkthrough

Insertion Sort

- Builds the sorted list one item at a time.
- Divides the list into **two portions**: sorted and unsorted.
- Selects the first element from the unsorted portion and "**inserts**" it into the right place in the sorted portion.
- Efficient for very small lists.
- Inefficient for large lists.

Insertion Sort

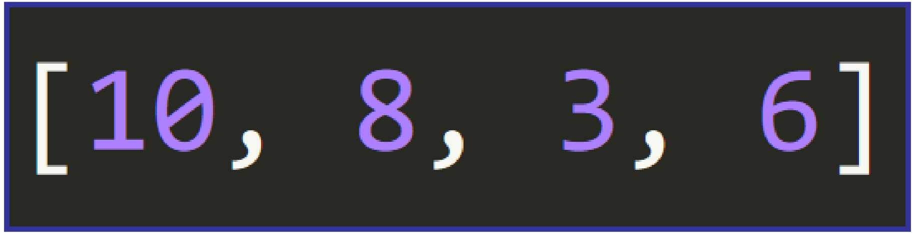


`[10, 8, 3, 6]`

Insertion Sort Algorithm

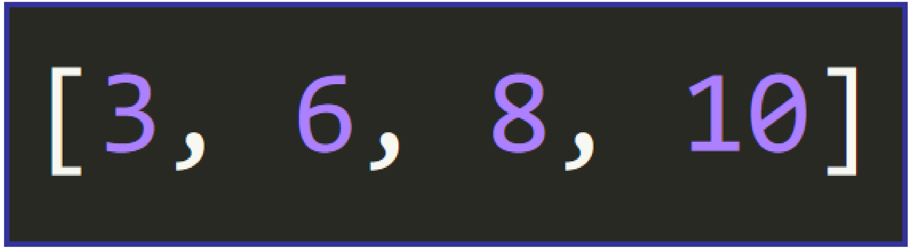
`[3, 6, 8, 10]`

Insertion Sort



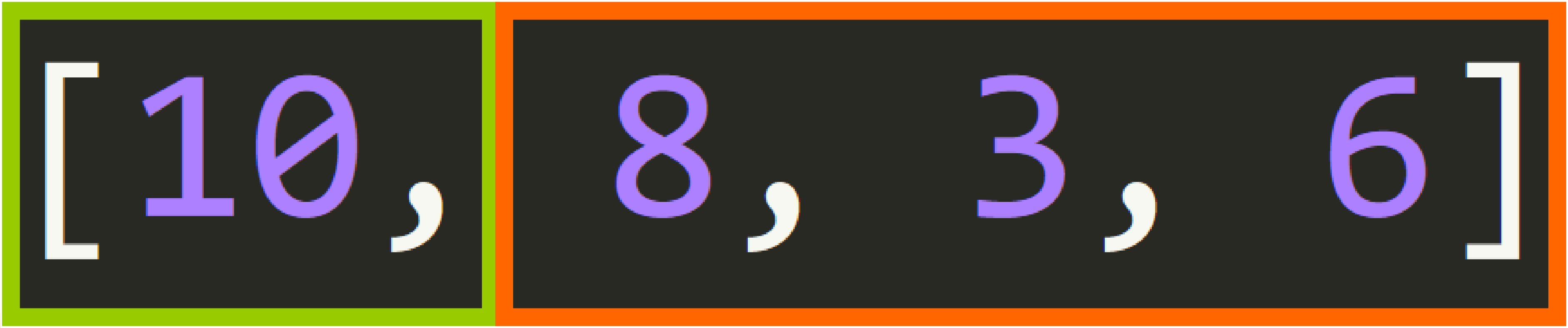
```
[10, 8, 3, 6]
```

↓ **Sort**



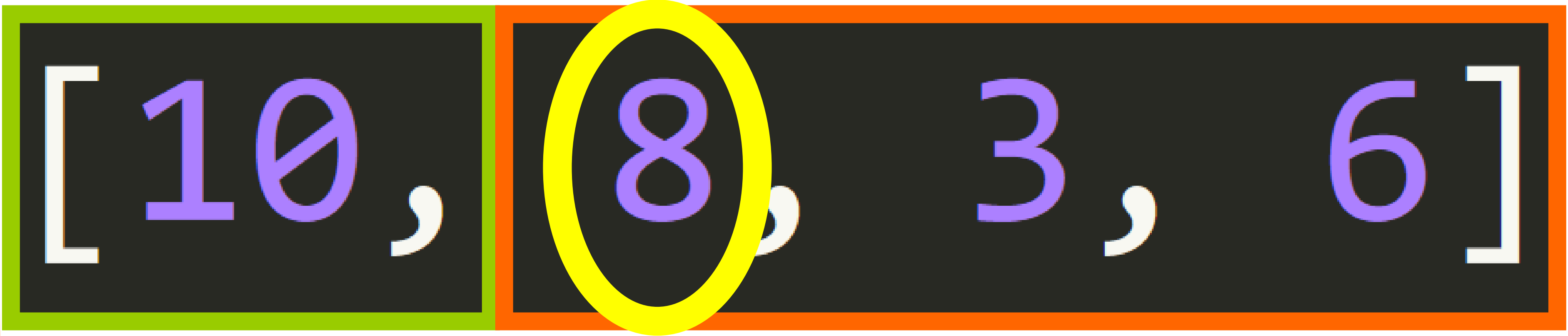
```
[3, 6, 8, 10]
```

Insertion Sort



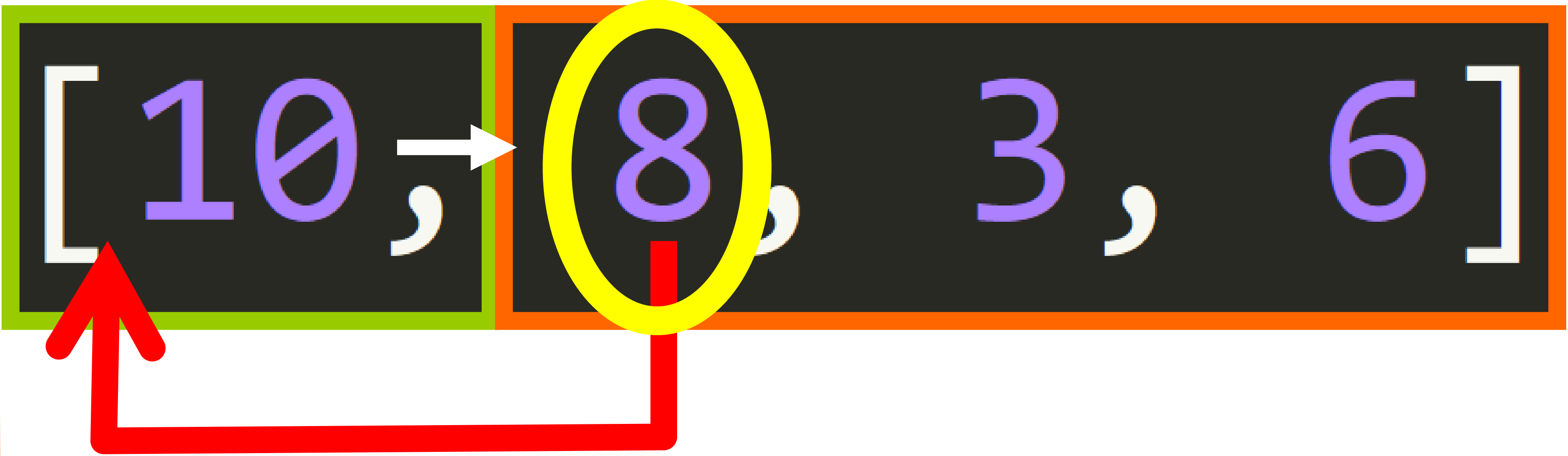
```
[10, 8, 3, 6]
```

Insertion Sort



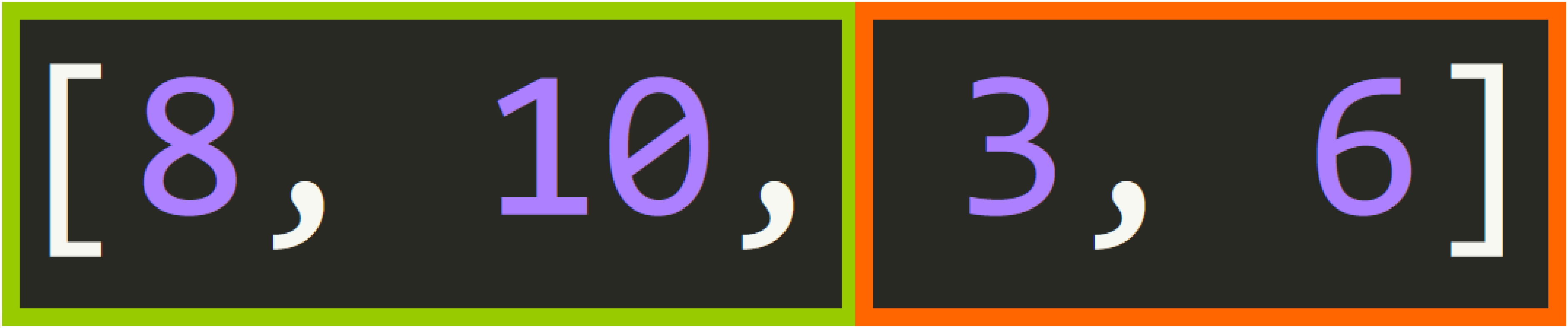
`[10, 8, 3, 6]`

Insertion Sort



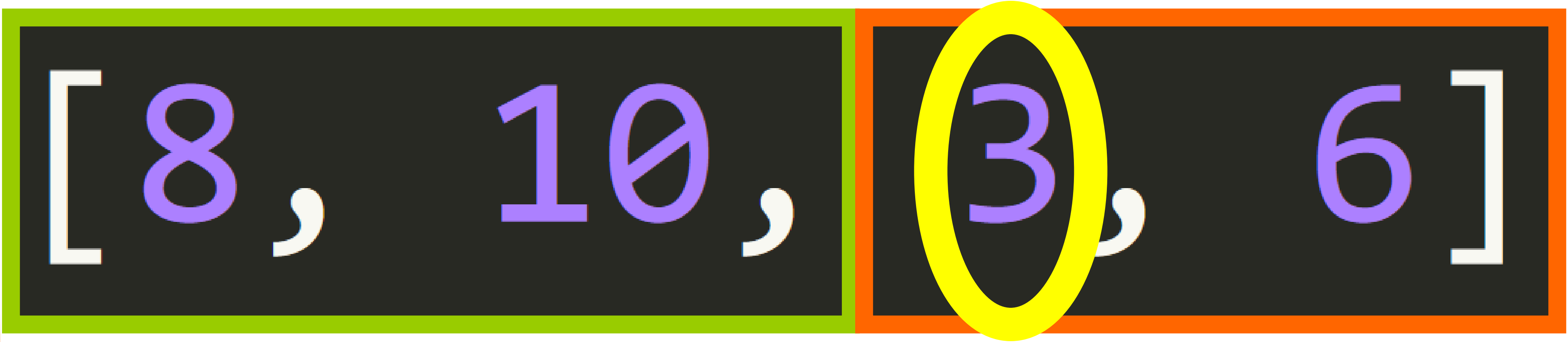
```
[10, 8, 3, 6]
```

Insertion Sort



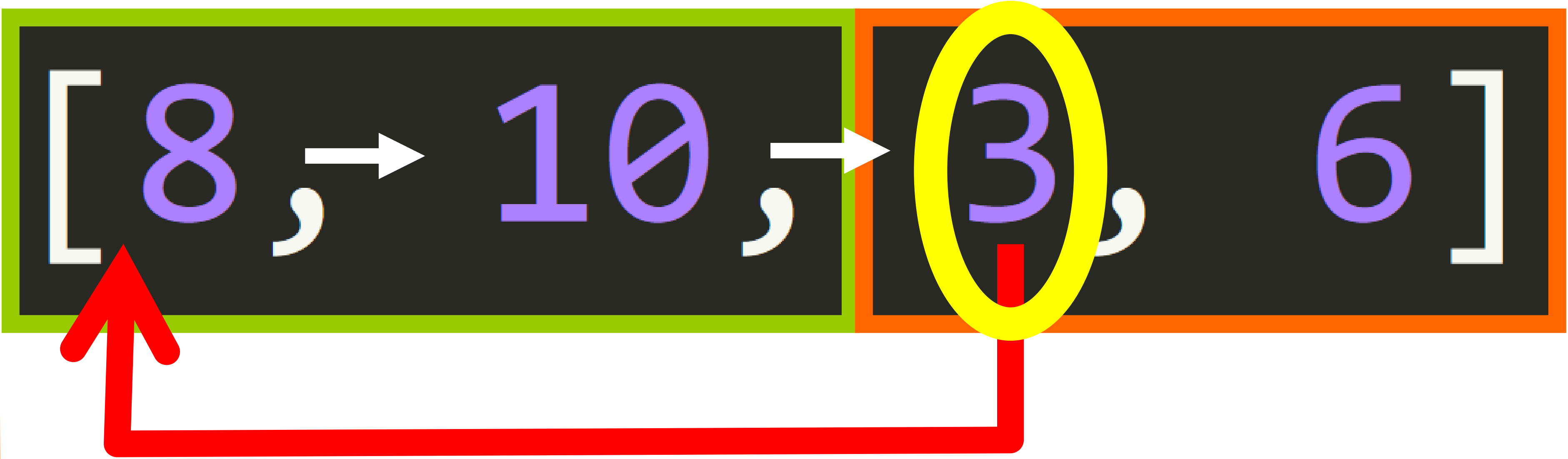
```
[8, 10, 3, 6]
```

Insertion Sort



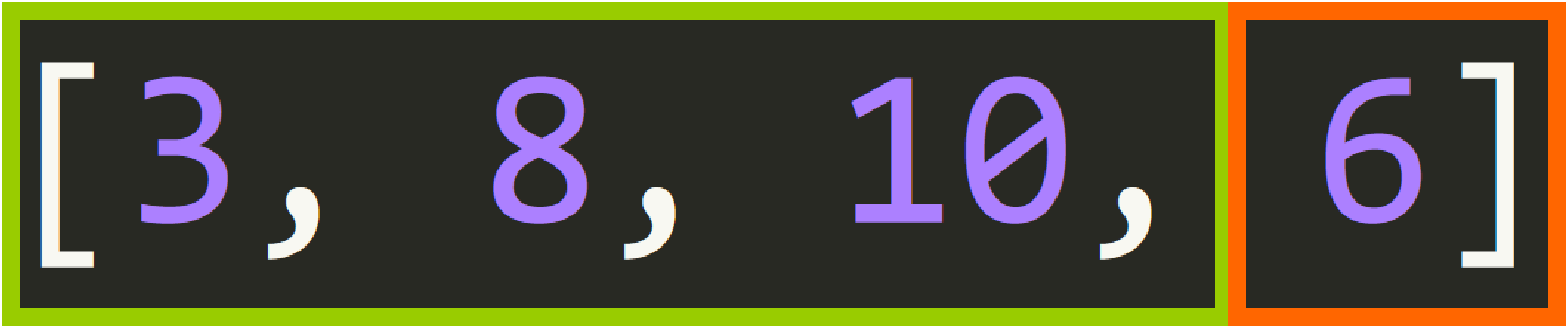
```
[8, 10, 3, 6]
```

Insertion Sort



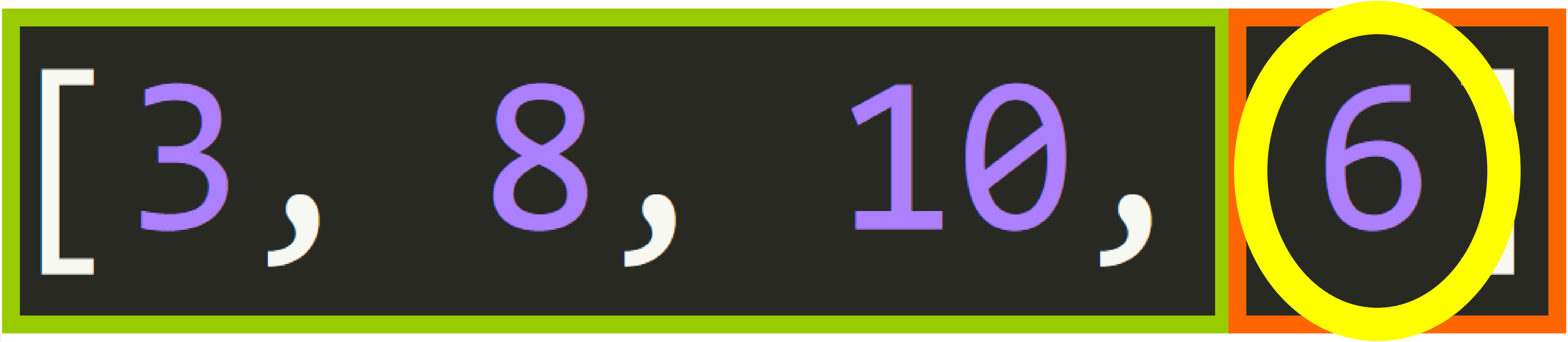
`[8, 10, 3, 6]`

Insertion Sort



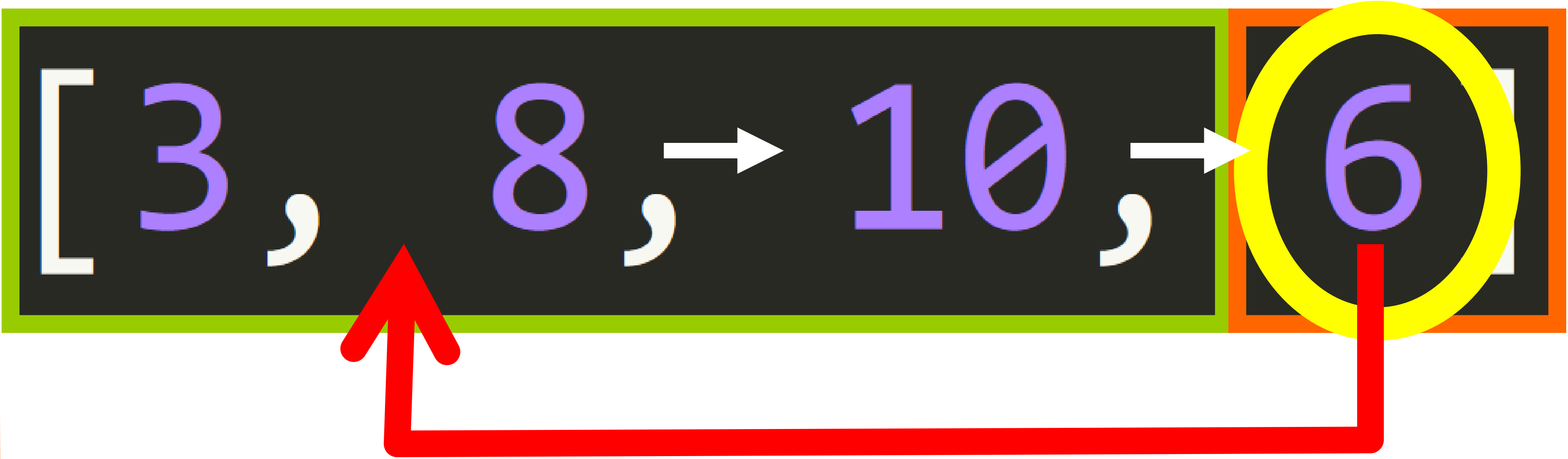
```
[3, 8, 10, 6]
```

Insertion Sort



[3, 8, 10, 6]

Insertion Sort

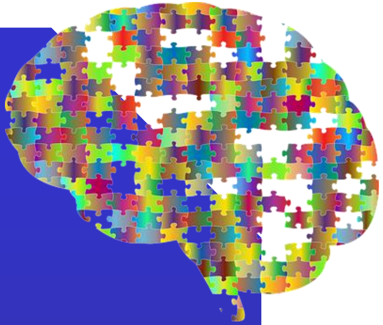


```
[3, 8, 10, 6]
```

Insertion Sort

Sorted

```
[3, 6, 8, 10]
```

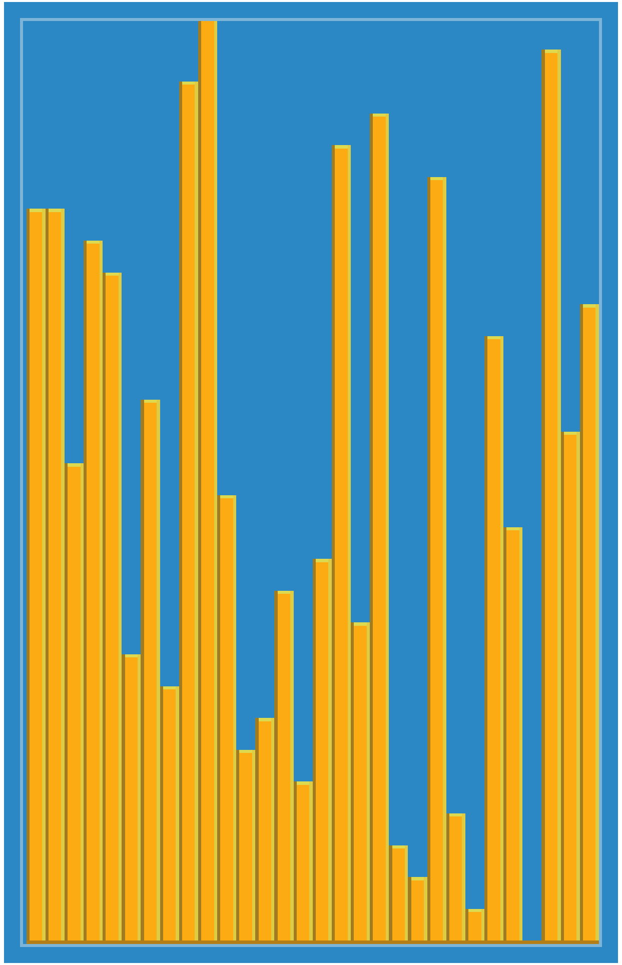


Algorithm

Insertion Sort

- **Select** the first element in the unsorted portion of the list.
- **Insert** the element into the correct position in the sorted portion of the list.
- **Expand** the sorted portion.

Insertion Sort



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Time to Code