

## **+ Concatenation**

**Appends the second list or tuple to the first.**

The data types being concatenated should be of the same type. For example, you cannot concatenate a list and a tuple.

### **List**

```
>>> founders=["Iron Man", "Thor", "Ant-Man", "Hulk", "Wasp"]
>>> recruits=["Captain America", "Hawkeye"]
>>> founders + recruits
['Iron Man', 'Thor', 'Ant-Man', 'Hulk', 'Wasp', 'Captain America', 'Hawkeye']
>>>
```

### **Tuple**

```
>>> stark=("Ned", "Catelyn", "Brandon", "Sansa", "Arya", "Robb")
>>> mormont=("Jeor", "Maeger", "Jorah", "Lyanna")
>>> stark + mormont
('Ned', 'Catelyn', 'Brandon', 'Sansa', 'Arya', 'Robb', 'Jeor', 'Maeger', 'Jorah', 'Lyanna')
>>>
```

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## **+ Repetition**

**Concatenates multiple copies of the same list or tuple.**

### **List**

```
>>> dna=["A", "G", "T", "C"]
>>> dna * 3
['A', 'G', 'T', 'C', 'A', 'G', 'T', 'C', 'A', 'G', 'T', 'C']
>>>
```

### **Tuple**

```
>>> glucose=("C6", "H12", "O6")
>>> glucose*6
('C6', 'H12', 'O6', 'C6', 'H12', 'O6', 'C6', 'H12', 'O6', 'C6', 'H12', 'O6', 'C6', 'H12', 'O6', 'C6', 'H12', 'O6')
```

```
'C6', 'H12', 'O6')
```

```
>>>
```

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## [] Slice

**Returns the item at given index in a list or tuple.**

A negative index counts the position from right with the count starting at -1.

Note: Recall that the index starts at 0.

## List

```
>>> founders=["Iron Man", "Thor", "Ant-Man", "Hulk", "Wasp"]
```

```
>>> founders[3]
```

```
'Hulk'
```

```
>>>
```

```
>>> founders[-3]
```

```
'Ant-Man'
```

```
>>>
```

## Tuple

```
>>> stark=("Ned", "Catelyn", "Brandon", "Sansa", "Arya", "Robb")
```

```
>>> stark[2]
```

```
] 'Brandon'
```

```
>>>
```

```
>>> stark[-1]
```

```
'Robb'
```

```
>>>
```

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## [:] Range Slice

**Fetches items in a range specified by the two index operands separated by the colon [:] symbol.**

If the first operand is omitted, the range starts at zero index. If the second operand is omitted, range goes upto the end of the list or tuple.

## List

```
>>> avengers=["Iron Man", "Thor", "Ant-Man", "Hulk", "Wasp", "Captain America",  
"Hawkeye"]  
>>> avengers[2:5]  
['Ant-Man', 'Hulk', 'Wasp']  
>>>  
>>> avengers[3:]  
['Hulk', 'Wasp', 'Captain America', 'Hawkeye']  
>>>  
>>> avengers[:3]  
['Iron Man', 'Thor', 'Ant-Man']  
>>>
```

## Tuple

```
>>> got=("Ned", "Catelyn", "Brandon", "Sansa", "Arya", "Robb", "Jeor", "Maegie",  
"Jorah", "Lyanna")  
>>> got[1:4]  
('Catelyn', 'Brandon', 'Sansa')  
>>>  
>>> got[3:]  
('Sansa', 'Arya', 'Robb', 'Jeor', 'Maegie', 'Jorah', 'Lyanna')  
>>> got[4:]  
('Arya', 'Robb', 'Jeor', 'Maegie', 'Jorah', 'Lyanna')  
>>>
```

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## in Membership

**Returns true if an object exists in the given list or tuple.**

Note: If the list or tuple comprises string items, then the items are case sensitive.

## List

```
>>> avengers=["Iron Man", "Thor", "Ant-Man", "Hulk", "Wasp", "Captain America",  
"Hawkeye"]
```

```
>>> "Wasp" in avengers
True
>>>
>>> "Black Widow" in avengers
False
>>>
```

## **Tuple**

```
>>> got=("Ned", "Catelyn", "Brandon", "Sansa", "Arya", "Robb", "Jeor", "Maege",
"Jorah", "Lyanna")
>>> "Arya" in got
True
>>>
>>> "Jon" in got
False
>>>
```

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## **not in Membership**

**Returns true if an object does not exist in the given list or tuple**

## **List**

```
>>> avengers=["Iron Man", "Thor", "Ant-Man", "Hulk", "Wasp", "Captain America",
"Hawkeye"]
>>> "Wasp" not in avengers
False
>>>
>>> "Black Widow" not in avengers
True
>>>
```

## **Tuple**

```
>>> got=("Ned", "Catelyn", "Brandon", "Sansa", "Arya", "Robb", "Jeor", "Maege",
"Jorah", "Lyanna")
```

```
>>> "Arya" not in got
```

```
False
```

```
>>>
```

```
>>> "Jon" not in got
```

```
True
```

```
>>>
```