Python Disjoint Sets

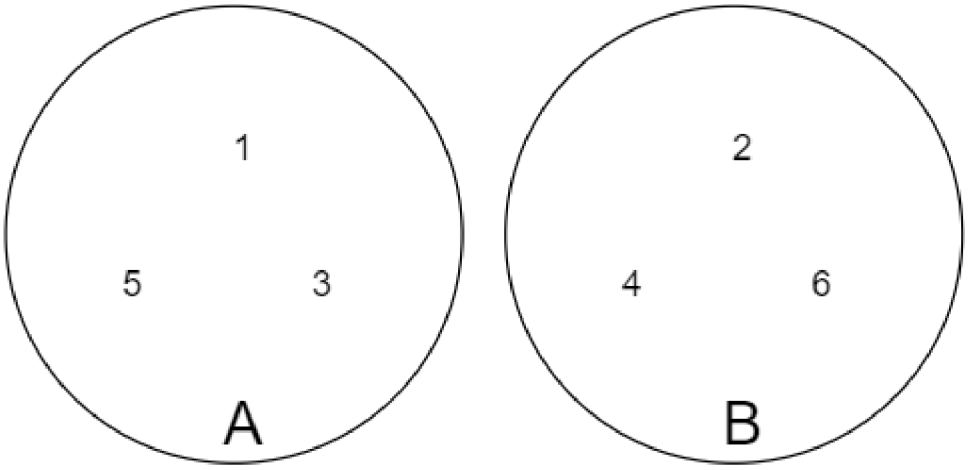
Summary: in this tutorial, you'll learn about disjoint sets and how to use the Python `isdisjoint()` method to check if two sets are disjoint.

Introduction to Python disjoint sets

Two sets (https://www.pythontutorial.net/python-basics/python-set/) are disjoint when they have no elements in common. In other words, two disjoint sets are sets whose intersection (https://www.pythontutorial.net/python-basics/python-set-intersection/) is an empty set.

For example, the `{1,3,5}` and `{2,4,6}` sets are disjoint because they have no common elements.

The following Venn diagram illustrates the disjoint sets:



In Python, you use the Set `isdisjoint()` method to check if two sets are disjoint or not:

```
set_a.isdisjoint(set_b)
```

The `isdisjoint()` method returns `True` if the `set_a` and `set_b` are disjoint. Otherwise, it returns `False` .

The `isdisjoint()` method also accepts any iterable, not just a set.

If you pass a list, a tuple, or a dictionary, the `isdisjoint()` method will convert it to a set before checking.

Python isdisjoint() method examples

The following example uses the `isdisjoint()` method to check if the set `odd_numbers` and set `even_numbers` are disjoint:

```
odd_numbers = {1, 3, 5}
even_numbers = {2, 4, 6}

result = odd_numbers.isdisjoint(even_numbers)

print(result)
```

Output:

```
True
```

Since no elements in the `odd_numbers` are present in the set `even_numbers`, the `isdisjoint()` method returns True.

The following example uses the `isdisjoint()` method to check if the set letters and the set alphanumerics are disjoint:

```
letters = {'A', 'B', 'C'}
alphanumerics = {'A', 1, 2}

result = letters.isdisjoint(alphanumerics)

print(result)
```

Output:

```
False
```

It returns `False` because the letter `'A'` in the set `alphanumerics` is present in the set `letters`.

The following example passes a list to the `isdisjoint()` method instead of a set:

```
letters = {'A', 'B', 'C'}
result = letters.isdisjoint([1, 2, 3])

print(result)
```

Output:

```
True
```

Summary

- Two sets are disjoint if they have no element in common.
- Use Python set `isdisjoint()` method to check if two sets are disjoint.