

Sets and Set Operations in Python

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This note is a compilation of information from two videos on Python sets.

What are Sets?

Sets are an **unordered** and **unchangeable** collection of items with no repeated entries or duplicates. They are defined using curly brackets `{}`.

Code Example: Creating a Set

...

```
# Creating a set with duplicates, which will be ignored
```

```
my_set = {1, 2, 2, 3}
```

```
print(my_set) # Output: {1, 2, 3}
```

```
# Creating an empty set
```

```
empty_set = set()
```

```
print(type(empty_set)) # Output: <class 'set'>
```

```
# Incorrect way to create an empty set
```

```
empty_dict = {}
```

```
print(type(empty_dict)) # Output: <class 'dict'>
```

...

Set Methods and Operations

Modifying Sets

- **Adding:** Use `add()` for a single item and `update()` for multiple items.
- **Removing:** Use `remove()` or `discard()`. `remove()` will raise an error if the item is not found, while `discard()` will not.

Set Operations

- **Union:** The `union()` method (`|` operator) combines two sets. The `update()` method modifies the original set with the union.
- **Intersection:** The `intersection()` method (`&` operator) finds common elements. The `intersection_update()` method updates the original set with the intersection.
- **Difference:** The `difference()` method (`-` operator) finds elements in the first set but not the second.
- **Symmetric Difference:** The `symmetric_difference()` method (`^` operator) finds elements not common to both sets.

Checking Relationships

- `isdisjoint()`: Checks if two sets have no common elements.
- `issuperset()`: Checks if one set contains all the elements of another.
- `issubset()`: Checks if a set is a subset of another.

Code Example: Set Operations

```
...
set1 = {1, 2, 3}
set2 = {3, 4, 5}

# Union
union_set = set1.union(set2)
print(union_set) # Output: {1, 2, 3, 4, 5}

# Intersection
intersection_set = set1.intersection(set2)
print(intersection_set) # Output: {3}

# Difference
difference_set = set1.difference(set2)
print(difference_set) # Output: {1, 2}
...
```