

Python Set Operations - Demonstration & Explanation

1. Create and Modify a Set

```
sec_data = {1, 2, 3, 4, 6}
sec_data.add(11)
sec_data.discard(1)
print(sec_data)
```

2. Set Operations: Union, Intersection, Difference, Symmetric Difference

```
set_1 = {1, 2, 3, 4}
set_2 = {2, 4}
union = set_1.union(set_2)
intersection = set_1.intersection(set_2)
difference = set_1.difference(set_2)
symmetric_difference = set_1.symmetric_difference(set_2)
```

3. Set Comprehension - Squares

```
set_data = {x**2 for x in range(1, 11)}
print(sorted(set_data))
```

4. Remove Duplicates Using Set

```
set_data = {1, 1, 2, 3, 3, 2}
print(set(set_data))
```

5. Subset & Superset Checks

```
set_data = {0, 1, 2, 3, 4}
set_data2 = {0, 1, 2}
set_data2.issubset(set_data)
set_data.issuperset(set_data2)
```

6. Frozenset

```
frozen = frozenset(set_data)
```

7. Convert Set to List and Back

```
set_data3 = {0, 1, 2, 3, 4}
list_data = list(set_data3)
list_data.append(6)
set_data2 = frozenset(list_data)
```

8. Iterate Over a Set

```
set_2 = {1, 2, 3, 4}
for x in set_2:
    print(x)
```

9. Remove Elements Until Empty

```
set_2 = {1, 2, 3, 4}
for x in set_2.copy():
    set_2.discard(x)
```

10. Set Copy and Modify

```
set_2 = {1, 2, 3, 4}
set_2_copy = set_2.copy()
set_2_copy.add(11)
```

11. Update with Symmetric Difference

```
set_ = {1, 2, 3, 4}
set_2 = {1, 2, 3, 4}
set_.add(12)
sym_diff = set_.symmetric_difference(set_2)
```

12. Membership Test

```
set_ = {1, 2, 3, 4}
print(1 in set_)
print(2 in set_)
print(50 in set_)
```