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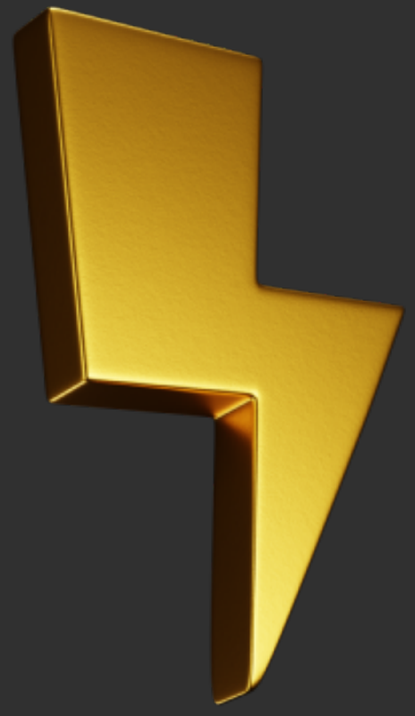
Python Collection Data Types - Comparison

Easily Remember the Differences



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Collection Types

The collection data types in Python are

- Lists
- Tuples
- Sets
- Dictionaries

They can be compared based on 5 properties.

Ordering

Maintains same order.

Duplicates Allowed

Allows same values to be repeated

Indexing

Can access a value using its positional index

Types Allowed

Values allowed within the collection.

Mutability

Original value can be modified or not.

Let us see them in detail.

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Lists

Lists are ordered

```
li = [3, 4, 5]
print(li)
```

Output

[3, 4, 5]

Lists can be indexed

```
li = [3, 4, 5]
print(li[0])
```

Output

3

Lists are mutable and can be modified.

```
li = [3, 4, 5]
li[0] = 6
```

Output

[6, 4, 5]

Lists allow all data types.

```
li = ["A", 1, [4, 5]]
print(li)
```

Output

["A", 1, [4, 5]]

Lists allow duplicate values

```
li = [1, 1, 1]
print(li)
```

Output

[1, 1, 1]

Summary

- Ordered
- Indexed
- Mutable
- Allows all types
- Allows duplicates

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Tuples

Tuples are ordered

```
tup = (10, 20)
print(tup)
```

Output

(10, 20)

Tuples can be indexed

```
tup = (10, 20, 30)
print(tup[2])
```

Output

30

Tuples are immutable and can´t be modified.

```
tup = (10, 20)
tup[0] = 30
```

Output

Error

Tuples allow all data types.

```
tup = ("A", 1, [4, 5])
print(tup)
```

Output

("A", 1, [4, 5])

Tuples allow duplicate values

```
tup = (1, 1, 1)
print(tup)
```

Output

(1, 1, 1)

Summary

Ordered

Indexed

Immutable

Allows all types

Allows duplicates

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Sets

Sets are unordered

```
st = {10, 20, 30}
print(st)
```

Output

{30, 10, 20}

Sets can't be indexed

```
st = {10, 20, 30}
print(st[1])
```

Output

Error

Sets are mutable and can be modified.

```
st = {10, 20, 30}
st.add(40)
```

Output

{30, 10, 40, 20}

Sets allow only immutable types.

```
st = {6, 8, [2, 4]}
print(st)
```

Output

Error

Sets do not allow duplicate values

```
st = {10, 10, 20}
print(st)
```

Output

{20, 10}

Summary

- Unordered
- Not Indexed
- Mutable
- Allows immutable types
- Allows no duplicates

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Dictionaries

Dicts are ordered

```
d = {1: 10, 2: 20}
print(d)
```

Output

{1: 10, 2:20}

Dicts can be keyed

```
d = {1: 10, 2: 20}
print(d[2])
```

Output

20

Dicts are mutable and can be modified.

```
d = {1: 10, 2: 20}
d[1] = 30
```

Output

{1: 30, 2: 20}

Allows only immutable types in keys.

```
d = {1: [10], 2: {20}}
print(d)
```

Output

{1: [10], 2: {20}}

Does not allow duplicate values in keys

```
d = {1: 10, 2: 20, 1: 20}
d[1] = 30
```

Output

{1: 20, 2: 20}

Summary

Ordered

Indexed (Keyed)

Mutable

Allows all types (values)

Allows duplicates (values)

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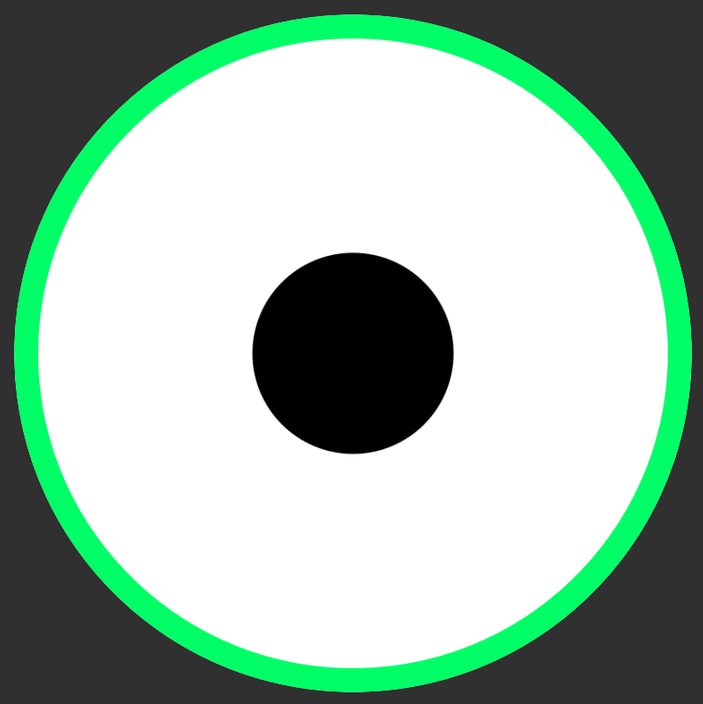

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