Introduction to Tuples

Python Tuples

Like lists, tuples are ordered sequences of multiple values

Indexed numerically, starting with 0 (zero-indexed)

Access values via bracket notation, loop through using for ... in, etc

Tuples syntax

Parentheses around tuple items is optional but good practice

Example:

```
zoo_animals = ("ape", "zebra", "penguin")
```

Tuples syntax

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Example:

```
zoo_animals =  "ape", "zebra", "penguin"
```

Tuples syntax

Parentheses around tuple items is optional but good practice

If a tuple has 0 items, parentheses are required

Example:

```
empty_tuple = ()
```

Tuples syntax

Parentheses around tuple items is optional but good practice

If a tuple has 0 items, parentheses are required

If a tuple has 1 item, parentheses are optional,
but a trailing comma is required

Example:

```
one_item_tuple = ( “lion”, )
```

Immutability

A tuple, unlike a list, is an immutable data type

The contents of a tuple cannot be changed after being declared

Immutability


```
zoo_animals = ("ape", "zebra", "penguin")
```

```
zoo_animals = ("elk", "giraffe", "condor")
```

Immutability


```
zoo_animals = ("ape", "zebra", "penguin")
```

```
zoo_animals[0] = "brontosaurus"
```

```
zoo_animals.pop(1)
```

Immutability

You can re-declare a variable with a different tuple, but you cannot change the items in a tuple

More efficient than lists, does not require dynamic memory allocation

Use over lists when you don’t need to change contents

More about Tuples

Can contain values of any data type, including composite data types

Can contain duplicate values

Tuples recap

Like lists, tuples are ordered sequences of values

Values can be of any data type, can contain duplicate values

Tuple items are separated by commas, and may optionally be surrounded by parentheses

Parentheses required when declaring an empty tuple

Tuples recap

When declaring a single-item tuple, must include trailing comma

Tuples are immutable, contents cannot be changed after declaration

Contents zero-indexed in sequential numeric order

Can use standard bracket notation to retrieve values

More efficient than lists because their memory doesn't need to be dynamically allocated