

# Section Overview

# What You Will Learn

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- Creating
- Deleting
- Converting
- Assignment
- More built-in functions

# Tuples

# Tuples

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- A tuple is an immutable list.
- Tuples are ordered.
- Values accessed by index.
- Iteration, looping, concatenation.
- Use when data should not change.

```
tuple_name = (item_1, item_2, item_N)
```

```
tuple_name = (item_1,)
```

<https://www.learningscripts.com>

```
days_of_the_week = ('Monday', 'Tuesday', 'Wednesday',  
                    'Thursday', 'Friday', 'Saturday', 'Sunday')  
monday = days_of_the_week[0]  
print(monday)  
print()  
  
for day in days_of_the_week:  
    print(day)
```

Monday

Monday

Tuesday

Wednesday

```
# You cannot modify values in a tuple.  
# This will raise an exception.  
days_of_the_week[0] = 'New Monday'
```

```
Traceback (most recent call last):  
  File "tuples.py", line 3, in <module>  
    days_of_the_week[0] = 'New Monday'  
TypeError: 'tuple' object does not support  
item assignment
```

```
days_of_the_week = ('Monday', 'Tuesday', 'Wednesday',  
                    'Thursday', 'Friday', 'Saturday', 'Sunday')  
print(days_of_the_week)  
del days_of_the_week  
# This will raise an exception as the tuple was deleted.  
print(days_of_the_week)
```

```
('Monday', 'Tuesday', 'Wednesday', 'Thursday', 'Friday',  
'Saturday', 'Sunday')
```

Traceback (most recent call last):

```
File "tuples2.py", line 5, in <module>
```

```
    print(days_of_the_week)
```

NameError: name 'days\_of\_the\_week' is not defined

# Switching between Tuples and Lists

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`list()` - Built-in function returns a list.

`tuple()` - Built-in function returns a tuple.

`type()` - Built-in function returns an object's type.

```
weekend_tuple = ('Saturday', 'Sunday')
weekend_list = list(weekend_tuple)
print('weekend_tuple is {}'.format(type(weekend_tuple)))
print('weekend_list is {}'.format(type(weekend_list)))
```

```
weekend_tuple is <class 'tuple'>.
weekend_list is <class 'list'>.
```

```
animals_list = ['man', 'bear', 'pig']
animals_tuple = tuple(animals_list)
print('animals_list is {}'.format(type(animals_list)))
print('animals_tuple is {}'.format(type(animals_tuple)))
```

```
animals_list is <class 'list'>.
animals_tuple is <class 'tuple'>.
```

# Looping through a Tuple

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```
for item_variable in tuple_name:  
    # Code block
```

```
weekend_days = ('Saturday', 'Sunday')  
for day in weekend_days:  
    print(day)
```

Saturday

Sunday

```
weekend_days = ('Saturday', 'Sunday')  
(sat, sun) = weekend_days  
print(sat)  
print(sun)
```

Saturday

Sunday

```
contact_info = ['555-0123', 'jason@example.com']  
(phone, email) = contact_info  
print(phone)  
print(email)
```

555-0123

jason@example.com

```
def high_and_low(numbers):  
    """Determine the highest and lowest number"""  
    highest = max(numbers)  
    lowest = min(numbers)  
    return (highest, lowest)  
  
lottery_numbers = [16, 4, 42, 15, 23, 8]  
(highest, lowest) = high_and_low(lottery_numbers)  
print('The highest number is: {}'.format(highest))  
print('The lowest number is: {}'.format(lowest))
```

The highest number is: 42

The lowest number is: 4

```
contacts = [('Jason', '555-0123'), ('Carl', '555-0987')]

for (name, phone) in contacts:
    print("{}'s phone number is {}".format(name, phone))
```

Jason's phone number is 555-0123.  
Carl's phone number is 555-0987.

# Section Summary

# Summary

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- A tuple is an immutable list, meaning once it is defined the values contained in the tuple cannot be changed.
- Delete a tuple with the del statement.

```
del tuple_name
```

# Summary

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- Tuples can be converted to lists using the `list()` built-in function.
- Lists can be converted to tuples using the `tuple()` built-in function.

# Summary

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- You can use tuple assignment to assign values to multiple variables at once.

```
(var_1, var_N) = (value_1, value_N)
```

- Tuple assignment can be used in for loops.

# Summary

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- The `max()` built-in function returns the largest item that is passed to it.
- The `min()` built-in function returns the smallest item that is passed to it.