Tuples Sets Dictionaries

1. **Tuples:**

A tuple is an immutable, ordered collection of elements.

Creating Tuples:

```python
my_tuple = (1, 2, 3)
```

Accessing Elements:

```python
print(my_tuple[0])  # Output: 1
```

Tuple Packing and Unpacking:

```python
# Packing
packed_tuple = 1, 2, 3

# Unpacking
a, b, c = packed_tuple
print(a, b, c)  # Output: 1 2 3
```

Tuple Methods:

Tuples have a few methods, but since they are immutable, these methods don't modify the tuple but return new tuples.

- **`count()` method:**
  - Returns the number of occurrences of a specified value.

    ```python
    my_tuple = (1, 2, 3, 2, 4, 2)
    count_of_2 = my_tuple.count(2)
    print(count_of_2)  # Output: 3
    ```

- **`index()` method:**
  - Returns the index of the first occurrence of a specified value.

    ```python
    index_of_3 = my_tuple.index(3)
    ```

```
    print(index_of_3)  # Output: 2
```

 2. **Sets:**

A set is an unordered collection of unique elements.

Creating Sets:

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

Adding and Removing Elements:

```python
my_set.add(4)
my_set.remove(2)
```

Set Operations:

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

union_set = set1 | set2  # Union
intersection_set = set1 & set2  # Intersection
difference_set = set1 - set2  # Set Difference
```

Set Methods:

- **`add()` method:**
  - Adds an element to the set.

    ```python
    my_set.add(5)
    ```

- **`remove()` method:**
  - Removes the specified element.

    ```python
    my_set.remove(3)
    ```

- **`union()` method:**
  - Returns a new set with elements from both sets.

```python
union_set = set1.union(set2)
```

- **`intersection()` method:**
  - Returns a new set with elements common to both sets.

  ```python
  intersection_set = set1.intersection(set2)
  ```

3. **Dictionaries:**

A dictionary is an unordered collection of key-value pairs.

Creating Dictionaries:

```python
my_dict = {'key1': 'value1', 'key2': 'value2', 'key3': 'value3'}
```

Accessing and Modifying Elements:

```python
print(my_dict['key1'])  # Output: 'value1'

my_dict['key2'] = 'new_value'
```

Dictionary Methods:

- **`keys()` method:**
  - Returns a view of all keys in the dictionary.

  ```python
  keys = my_dict.keys()
  ```

- **`values()` method:**
  - Returns a view of all values in the dictionary.

  ```python
  values = my_dict.values()
  ```

- **`items()` method:**
  - Returns a view of all key-value pairs in the dictionary.

```python
items = my_dict.items()
```

- **`get()` method:**
  - Returns the value of the specified key. If the key does not exist, it returns a default value (or `None`).

    ```python
    value = my_dict.get('key4', 'default_value')
    ```