Dictionary

- Used to store data values in `{ key : value, key : value }` pairs.
- Collection which is `ordered`, `changeable` and `do not allow duplicates`.
- Ordered, means items have a defined order, and that order will not change.
- No duplicated, means cannot have two items with the same key (As a result, the values associated with those keys will override each other, and only the last assignment for each key will be retained.)
- In a dictionary in Python, The values can be any data type, but the key cannot be list, dict, and set.

```
country_capitals = {
"United States": "Washington D.C.",
"Italy": "Rome",
"England": "London"
}

print(country_capitals["United States"])
```

Method

len()

- Returns `number of items` in the dictionary.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
  "year": 2020
}
print(len(thisdict)) # Doesn't count the duplicates
```

pop()

- `Remove` the item with the `specified key`.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
  "year": 2020,
  "year": 2024
}
print(thisdict['year'])
thisdict.pop("year")
print(thisdict)
```

update()

- `Add or change` dictionary items.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
thisdict.update({"year": 2020})
print(thisdict)
```

clear()

- `Remove all the items` from the dictionary.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
thisdict.clear()
print(thisdict)
```

del

- `Remove all the items` from the dictionary.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
del thisdict
print(thisdict)
```

values()

- Returns all the dictionary's `values`.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
print(thisdict.values())
```

keys()

- Returns all the dictionary's `keys`.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
print(thisdict.keys())
```

get()

- Returns the `values of the specified key`.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
print(thisdict.get("year"))
```

popitem()

- Returns the `last inserted` key and value as a `tuple`.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
print(thisdict.popitem())
```

fromkeys()

- Returns a dictionary with the `specified keys and value`

```
x = ('key1', 'key2', 'key3')
y = 0

thisdict = dict.fromkeys(x, y)
print(thisdict)
```

copy()

- Returns a `copy of the dictionary`.

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
newdict = thisdict.copy()
print(newdict)
```

items()

- Returns a `list` containing a `tuple for each key value pair`

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}
print(thisdict.items())
```

setdefault()

- Returns the `value of the specified key`. If the key does not exist: insert the key, with the specified value
  `dictionary.setdefault(keyname, value)`
  keyname: Required. The keyname of the item you want to return the value from
  value: Optional. If the key exist, this parameter has no effect. If the key does not exist, this value becomes the key's value Default value None

```
car = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964
}
print(car.setdefault("model", "Bronco"))
```

Looping

```
thisdict = {
  "brand": "Ford",
  "model": "Mustang",
  "year": 1964,
}

for x in thisdict:
  print(x)

print("##########")

for x in thisdict:
  print(thisdict[x])

print("##########")

for x in thisdict.values():
  print(x)
```

Tupling and Listing

When you cast a dictionary to a list or tuple it will only return the list/tuple of **only** the keys

```
print(tuple({2:4,5:6,7:8}))
print(list({'A':8,"C":"6",5:4}))
```