Dictionaries

June 18, 2024

Dictionaries

```
thisdict = {
"brand": "XYZ",
"model": "ABC",
"year": 1965
}
print(thisdict)
```

Dictionaries

```
thisdict = {
"brand": "XYZ",
"model": "ABC",
"year": 1965
}
print(thisdict)
```

Output: {'brand': 'XYZ', 'model': 'ABC', 'year': 1965}

Dictionaries - Continued...

- A dictionary is a collection which is ordered*, changeable and do not allow duplicates.

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- Enclosed in Curly braces.
- Elements separated by commas

Dictionaries - Continued...

- A dictionary is a collection which is ordered*, changeable and do not allow duplicates.
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- Enclosed in Curly braces.
- Elements separated by commas
- Key, value pair separated by colon

Dictionaries - Continued...

- A dictionary is a collection which is ordered*, changeable and do not allow duplicates.
- *As of Python version 3.7, dictionaries are ordered. In Python 3.6 and earlier, dictionaries are unordered.
- Enclosed in Curly braces.
- Elements separated by commas
- Key, value pair separated by colon

Accessing individual Elements using key

```
thisdict = {
"brand": "abc",
"model": "def",
"year": 1964
}
print(thisdict["brand"])
```

Accessing individual Elements using key

```
thisdict = {
"brand": "abc",
"model": "def",
"year": 1964
}
print(thisdict["brand"])
```

Output: abc

Duplicate Keys

Dictionaries cannot have two items with the same key.

```
thisdict = {
"brand": "abc",
"model": "dec",
"year": 1965,
"year": 2024
}
print(thisdict)
```

Duplicate Keys

Dictionaries cannot have two items with the same key.

```
thisdict = {
"brand": "abc",
"model": "dec",
"year": 1965,
"year": 2024
}
print(thisdict)
```

Output: {'brand': 'abc', 'model': 'dec', 'year': 2024}

Length of a dictionary

```
thisdict = {
"brand": "pqr",
"model": "xyz",
"year": 1964,
"year": 2020
}
print(len(thisdict))
```

Length of a dictionary

```
thisdict = {
"brand": "pqr",
"model": "xyz",
"year": 1964,
"year": 2020
}
print(len(thisdict))
```

Output: 3

Values in the Dictionary

- The values in dictionary items can be of any data type:
- String, Boolean, int, List Data type.

```
thisdict = {
"brand": "Welcome",
"electric": False,
"year": 1964,
"colors": ["red", "white", "blue"]
}
```

The Type Method

```
thisdict = {
"brand": "XYZ",
"model": "PQR",
"year": 1964
}
print(type(thisdict))
```

The Type Method

```
thisdict = {
"brand": "XYZ",
"model": "PQR",
"year": 1964
}
print(type(thisdict))
```

Output: <class 'dict'>

Accessing

```
thisdict = {

"brand": "Ford",

"model": "pqr",

"year": 1965

}

x = thisdict["model"]

print(x)
```

Accessing

```
thisdict = {
"brand": "Ford",
"model": "pqr",
"year": 1965
}
x = thisdict["model"]
print(x)
```

Output: pqr

Accessing using get()

```
thisdict = {
"brand": "abc",
"model": "def",
"year": 1964
}
x = thisdict.get("model")
print(x)
```

Accessing using get()

```
thisdict = {
"brand": "abc",
"model": "def",
"year": 1964
}
x = thisdict.get("model")
print(x)
```

Output: def

Printing Keys

```
thisdict = {

"brand": "abc",

"model": "defpqr",

"year": 1964

}

x = thisdict.keys()

print(x)
```

Printing Keys

```
thisdict = {
"brand": "abc",
"model": "defpqr",
"year": 1964
}
x = thisdict.keys()
print(x)
```

Output: dict_keys(['brand', 'model', 'year'])

Adding an element to the dictionary

```
car = {
"brand": "abc",
"model": "pqr",
"year": 1964
}
x = car.keys()
print(x) #before the change
car["color"] = "white"
print(x) #after the change
```

Adding an element to the dictionary

```
car = {
"brand": "abc",
"model": "pqr",
"year": 1964
}
x = car.keys()
print(x) #before the change
car["color"] = "white"
print(x) #after the change
```

Output:dict_keys(['brand', 'model', 'year'])
dict_keys(['brand', 'model', 'year', 'color'])

Printing Values of a dictionary

```
thisdict = {
"brand": "xyz",
"model": "xyzpqr",
"year": 2022
}
x = thisdict.values()
print(x)
```

Printing Values of a dictionary

```
thisdict = {
"brand": "xyz",
"model": "xyzpqr",
"year": 2022
}
x = thisdict.values()
print(x)
```

Output: dict_values(['xyz', 'xyzpqr', 2022])

Values: Before and After

```
car = {
"brand": "abcdef",
"model": "ghijkl",
"year": 1964
}
x = car.values()
print(x) #before the change
car["year"] = 2020
print(x) #after the change
```

Values: Before and After

```
car = {
"brand": "abcdef",
"model": "ghijkl",
"year": 1964
}
x = car.values()
print(x) #before the change
car["year"] = 2020
print(x) #after the change
```

Output: dict_values(['abcdef', 'ghijkl', 1964])
dict_values(['abcdef', 'ghijkl', 2020])

Values: Before and After

```
car = {
"brand": "abc",
"model": "pqrstuv",
"year": 1964
}
x = car.values()
print(x) #before the change
car["color"] = "red"
print(x) #after the change
```

Values: Before and After

```
car = {
"brand": "abc",
"model": "pqrstuv",
"year": 1964
}
x = car.values()
print(x) #before the change
car["color"] = "red"
print(x) #after the change
```

Output: dict_values(['abc', 'pqrstuv', 1964])
dict_values(['abc', 'pqrstuv', 1964, 'red'])

What is the items() method?

```
thisdict = {
"brand": "abc",
"model": "jkl",
"year": 2023
}
x = thisdict.items()
print(x)
```

What is the items() method?

```
thisdict = {
"brand": "abc",
"model": "jkl",
"year": 2023
}
x = thisdict.items()
print(x)
```

Output: dict_items([('brand', 'abc'), ('model', 'jkl'), ('year', 2023)])

Items method: before and after

```
car = {
"brand": "abc",
"model": "jkl",
"year": 1965
}
x = car.items()
print(x) #before the change
car["year"] = 2020
print(x) #after the change
```

Items method: before and after

```
car = {
"brand": "abc",
"model": "jkl",
"year": 1965
}
x = car.items()
print(x) #before the change
car["year"] = 2020
print(x) #after the change
```

Output: dict_items([('brand', 'abc'), ('model', 'jkl'), ('year', 1965)])
dict_items([('brand', 'abc'), ('model', 'jkl'), ('year', 2020)])

Add an item: Before and after

```
car = {
"brand": "abc",
"model": "def",
"year": 1964
}
x = car.items()
print(x) #before the change
car["color"] = "red"
print(x) #after the change
```

Add an item: Before and after

```
car = {
"brand": "abc",
"model": "def",
"year": 1964
}
x = car.items()
print(x) #before the change
car["color"] = "red"
print(x) #after the change
```

Output: dict_items([('brand', 'abc'), ('model', 'def'), ('year', 1964)])
dict_items([('brand', 'abc'), ('model', 'def'), ('year', 1964), ('color', 'red')])

if key is in the dictionary?

```
thisdict = {
"brand": "xyz",
"model": "zyx",
"year": 2002
}
if "model" in thisdict:
    print("Yes, 'model' is one of the keys in the thisdict dictionary")
```

if key is in the dictionary?

```
thisdict = {
"brand": "xyz",
"model": "zyx",
"year": 2002
}
if "model" in thisdict:
    print("Yes, 'model' is one of the keys in the thisdict dictionary")
```

Output: Yes, 'model' is one of the keys in the thisdict dictionary

Change the value of a key...

```
thisdict = {
"brand": "ABC",
"model": "ABCDEF",
"year": 1964
}
thisdict["year"] = 2018
print(thisdict)
```

Change the value of a key...

```
thisdict = {
"brand": "ABC",
"model": "ABCDEF",
"year": 1964
}
thisdict["year"] = 2018
print(thisdict)
```

Output: {'brand': 'ABC', 'model': 'ABCDEF', 'year': 2018}

The update method...

```
thisdict = {
"brand": "ABC",
"model": "PQR",
"year": 1945
}
thisdict.update({"year":2020})
```

The update method...

```
thisdict = {
"brand": "ABC",
"model": "PQR",
"year": 1945
}
thisdict.update({"year":2020})
```

Output: {'brand': 'ABC', 'model': 'PQR', 'year': 2020}

Adding Items

```
thisdict = {
"brand": "abc",
"model": "cba",
"year": 1964
}
thisdict["color"] = "green"
print(thisdict)
```

Adding Items

```
thisdict = {
"brand": "abc",
"model": "cba",
"year": 1964
}
thisdict["color"] = "green"
print(thisdict)
```

Output: {'brand': 'abc', 'model': 'cba', 'year': 1964, 'color': 'green'}

Update Items

```
thisdict = {
"brand": "abc",
"model": "abc",
"year": 1964
}
thisdict.update({"color": "red"})
print(thisdict)
```

Update Items

```
thisdict = {
"brand": "abc",
"model": "abc",
"year": 1964
}
thisdict.update({"color": "red"})
print(thisdict)
```

Output: {'brand': 'abc', 'model': 'abc', 'year': 1964, 'color': 'red'}

Removing Items

```
thisdict = {
"brand": "abc",
"model": "pqr",
"year": 2020
}
thisdict.pop("model")
print(thisdict)
```

Removing Items

```
thisdict = {
"brand": "abc",
"model": "pqr",
"year": 2020
}
thisdict.pop("model")
print(thisdict)
```

Output: {'brand': 'abc', 'year': 2020}

Removing Items–continued...

```
thisdict = {
"brand": "abcd",
"model": "ghijkl",
"year": 1964
}
thisdict.pop item()
print(thisdict)
```

Removing Items–continued...

```
thisdict = {
"brand": "abcd",
"model": "ghijkl",
"year": 1964
}
thisdict.pop item()
print(thisdict)
```

Output: {'brand': 'abcd', 'model': 'ghijkl'}

Deleting an item with a key

```
thisdict = {
"brand": "pqr",
"model": "stuvwxyz",
"year": 1964
}
del thisdict["model"]
print(thisdict)
```

Deleting an item with a key

```
thisdict = {
"brand": "pqr",
"model": "stuvwxyz",
"year": 1964
}
del thisdict["model"]
print(thisdict)
```

Output: {'brand': 'pqr', 'year': 1964}

Deleting the entire dictionary

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

Deleting the entire dictionary

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

Output:ERROR

Clear method

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

Clear method

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

Output:{ }

Printing Keys...

```
thisdict = {
"brand": "a",
"model": "b",
"year": 1964
}
for x in thisdict:
    print(x)
```

Printing Keys...

```
thisdict = {
"brand": "a",
"model": "b",
"year": 1964
}
for x in thisdict:
    print(x)
```

Ouput: brand
model
year

Printing Values...

```
thisdict = {
"brand": "abc",
"model": "jkl",
"year": 2020
}
for x in thisdict:
    print(thisdict[x])
```

Printing Values...

```
thisdict = {
"brand": "abc",
"model": "jkl",
"year": 2020
}
for x in thisdict:
    print(thisdict[x])
```

Ouput: abc
jkl
2020

Printing Values...

```
thisdict = {
"brand": "a",
"model": "abc",
"year": 1964
}

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

Printing Values...

```
thisdict = {
"brand": "a",
"model": "abc",
"year": 1964
}

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

Output: a
abc
1964

Printing Keys...

```
thisdict = {
"brand": "a",
"model": "b",
"year": 1964
}

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

Printing Keys...

```
thisdict = {
"brand": "a",
"model": "b",
"year": 1964
}

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

Output: brand
model
year

Loop through both Keys and values pair

```
thisdict = {
"brand": "abc",
"model": "def",
"year": 1967
}

for x, y in thisdict.items():
    print(x, y)
```

Loop through both Keys and values pair

```
thisdict = {
"brand": "abc",
"model": "def",
"year": 1967
}

for x, y in thisdict.items():
    print(x, y)
```

Output: brand abc
model def
year 1964

Copy Dictionary

```
thisdict = {
"brand": "a",
"model": "b",
"year": 1965
}
mydict = thisdict.copy()
print(mydict)
```

Copy Dictionary

```
thisdict = {
"brand": "a",
"model": "b",
"year": 1965
}
mydict = thisdict.copy()
print(mydict)
```

Output: {'brand': 'a', 'model': 'b', 'year': 1965}

Another Way: Copy Dictionary

```
thisdict = {
"brand": "pqr",
"model": "stuvwxyz",
"year": 1964
}
mydict = dict(thisdict)
print(mydict)
```

Another Way: Copy Dictionary

```
thisdict = {
"brand": "pqr",
"model": "stuvwxyz",
"year": 1964
}
mydict = dict(thisdict)
print(mydict)
```

Output: {'brand': 'pqr', 'model': 'stuvwxyz', 'year': 1964}

Nested Dictionaries

```
myfamily = {
"child1" : {
"name" : "Rajesh",
"year" : 2004
},
"child2" : {
"name" : "Ram",
"year" : 2007
}
}
print(myfamily)
```

Nested Dictionaries

```
myfamily = {
"child1" : {
"name" : "Rajesh",
"year" : 2004
},
"child2" : {
"name" : "Ram",
"year" : 2007
}
}
print(myfamily)
```

Nested Dictionaries

```
child1 = {

"name" : "Raj",

"year" : 2004

}

child2 = {

"name" : "Rajesh",

"year" : 2007

}
```

Nested Dictionaries - continued

```
myfamily = {
"child1" : child1,
"child2" : child2,
}
```

Nested Dictionaries - continued

```
myfamily = {
"child1" : child1,
"child2" : child2,
}
```

Accessing in Nested Dictionaries

```
myfamily = {
"child1" : {
"name" : "rajesh",
"year" : 2004
},
"child2" : {
"name" : "raj",
"year" : 2007
} }
print(myfamily["child2"]["name"])
```

Accessing in Nested Dictionaries

```
myfamily = {
"child1" : {
"name" : "rajesh",
"year" : 2004
},
"child2" : {
"name" : "raj",
"year" : 2007
} }
print(myfamily["child2"]["name"])
```

Output: raj

Printing Nested Dictionary

```
myfamily = {
"child1" : {
"name" : "Rajesh",
"year" : 2004
},
"child2" : {
"name" : "Ravi",
"year" : 2007
}
}
```

Printing Nested Dictionary- Continued...

```
for x, obj in myfamily.items():
    print(x)
    for y in obj:
        print(y + ":", obj[y])
```

Printing Nested Dictionary- Continued...

```
for x, obj in myfamily.items():

      print(x)

    for y in obj:

        print(y + ":", obj[y])
```

Output: child1
name: Rajesh
year: 2004
child2
name: Ravi
year: 2007

Python Program to sort dictionary by key value.

Python Program to sort dictionary by key value.

```
myDict = {"ravi": 10, "rajnish": 9, "sanjeev": 15,
"yash": 2, "suraj": 32}

myKeys = list(myDict.keys())

myKeys.sort()

sorted_dict = {i: myDict[i] for i in myKeys}

print(sorted_dict)
```

Python Program to merge two Dictionaries

Python Program to merge two Dictionaries

```
dict1 = {"Ten": 10, "Twenty": 20, "Thirty": 30}

dict2 = {"Thirty": 30, "Fourty": 40, "Fifty": 50}

dict3 = dict1.copy()

dict3.update(dict2)

print(dict3)
```

Python Program to merge two Dictionaries

```
dict1 = {"Ten": 10, "Twenty": 20, "Thirty": 30}

dict2 = {"Thirty": 30, "Fourty": 40, "Fifty": 50}

dict3 = dict1.copy()

dict3.update(dict2)

print(dict3)
```

OUPUT?

Write a Python script to generate and print a dictionary that contains all numbers (between 1 and n both inclusive) in the form (x, x*x)

Write a Python script to generate and print a dictionary that contains all numbers (between 1 and n both inclusive) in the form (x, x*x)

```
l=int(input("Enter the Limit : "))

d = dict()

for x in range(1,l+1):

        d[x]=x*x

print(d)
```