程式設計概論
Programming 101
—其他資料型態
dictionaries (dict)

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Outline

- Python資料結構
  - Sequence
    - List
    - tuple
  - Non-sequence
    - dictionary
    - set
- dictionary

dictionary

- A dictionary is an object that stores a collection of data.
- Each element in a dictionary has two parts: a key and a value (key-value pairs).
- You use a key to locate a specific value.
  - Retrieve a value from a dictionary ➔ ***dict_name[key]***
- Key-value pairs are often referred to as *mappings* because each key is mapped to a value.
- Create a dictionary by enclosing the elements inside a set of curly braces {}.
- Example: phonebook={'Chris':'555-1111','Katie':'555-2222', 'Joanne':'555-3333'}

dictionary (cont.)

- The values in a dictionary can be objects (任何資料型態)
- The keys must be immutable objects, keys can be strings, integers, floating-point values, or tuples. Keys cannot be lists or any other type of immutable object.
- Cannot have duplicate keys in a dictionary. (「鍵」是唯一的)
  - When you assign a value to an existing key, the new value replaces the existing value.
- Create an empty dictionary: dict_1=dict() or dict_1={}

```
E=dict()
E1={}
EA={"one":1,"two":2, "three":3}
EB=dict({"three":3,"two":2,"one":1})
EC=dict(one=1,two=2,three=3)
ED=dict([("two",2),("one",1),("three",3)])
print(ED)
```

dictionary operator

- dict(字典): non-sequence
- dict: **does not work**(**不支援**)+, *, indexing, slicing and related order operation
- dict: in and not in operator for check key
- dict: == and !=

dict: add, delete, modify

Add or modify:
dict_name[key]=value

Delete
del dict_name[key]

```
pwd={'Justin':10912398, 'John':10812890}
print(pwd['Justin'])
pwd['Helen']=10897281  #add key_value
pwd['Helen']=10897310  # modify value
print(pwd)
del pwd['John']  # del key為John的key_value
print(pwd)
print(pwd.items())
print(pwd.keys())
print(pwd.values())
print(pwd.get('Helen'))
```

dict: add, delete, modify (cont.)

D1==D2➔ D1and D2 the same key-value pairs, returning **True**

```
EA={"one":1,"two":2, "three":3, "four":4, "five":5}
len(EA)
#使用for迴圈走訪dict中所有的鍵:值對
    for key in EA:
        print("鍵為",key,"所對映的值為",EA[key])
EA.get("one") #傳回鍵為”one”所對映的值
EA.pop("three") #刪除鍵為”three”的鍵:值並傳回值
EA.popitem() #刪除最後一個鍵:值並傳回該鍵:值對
```

dictionary functions in this class

len(dict_name)
dict_name.copy()
dict_name.get(key): get its value
dict_name.items(): get(key,value)
key in dict_name: get True/False
dict_name.keys(): get all keys in dict_name
dict_name.values(): get all value in dict_name
dict_name.update(dict_new)

Student exercise_6

Question 1

- Please use a Python program to design a market survey. First, the user is required to enter his/her name and travel location, and then save it into the survey_dict dictionary. In the dict, the key is name and the value is travel_location.
- After inputting, the program ask if anyone wants to enter information(yes/no).
- Finally, print the survey_dict including usernames and travel_locations.

Question 2: Word Frequency

- Write a program that assigns a text. The program should create a dictionary in which the keys are the individual words found in the file and the values are the number of times each word appears.
- For example, if the word “the” appears 128 times, the dictionary would contain an element with ‘the’ as the key and 128 as the value. The program should either display the frequency of each word or create a second file containing a list of each word and its frequency.

Question 2: Word Frequency (cont.)

- The text file is the song “What Makes You Beautiful”
- str1.split()

Review

Textbook 10.1