Sets, Tuples, Dictionaries + File IO

Practice2

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Data Structures in Python

Collection	Mutable?	Ordered?	Example	Useful Methods
str	No	Yes	s = “Hello, World \n”	s.split(‘,’), s.replace(‘a’, ‘b’) s.strip()
List	Yes	Yes	l = [10, 5, 8, 13]	l.append(5), l.insert(0,1), l.index(5), l.sort(), l.count(5)
Tuple	No	Yes	t=(4, 6, 3, 5, 4)	t.count(6), t.index(6)
set	Yes	No	st={‘a’, ‘b’, ‘c’, ‘d’}	st.add(‘e’), st.remove(‘a’), st.clear(), st.difference({‘a’})
dictionary	Yes	Yes	dct={“inhoe”: ‘A’, “yesong”:‘B’, “jaewook”:‘C’}	dct.keys(), dct.values(), dct.items(), dct.get(“inhoe”)

2.1 Find duplicates

- Take a list of integers as input argument, and return a set of numbers that appear two or more times.

  - **Ex 1)**
    >>> P1([1, 2, 3, 1])
    {1}

  - **Ex 2)**
    >>> P1([1, 1, 2, 3, 3, 3])
    {1, 3}

  - **Ex 3)**
    >>> P1([1, 2, 3, 4, 5])
    set()

2.2 Particle with highest probability

- Probability of detecting each subatomic particles is given in the form of dictionary {str: float}.
  Make a function that returns the particle with the highest probability.
  There is no case that the probability is the same among different particles.

  - **Ex 1)**
    >>> P2({'neutron': 0.55, 'proton': 0.21, 'meson': 0.03, 'muon': 0.07, 'neutrino': 0.14})
    'neutron'

  - **Ex 2)**
    >>> P2({'neutron': 0.11, 'proton': 0.21, 'meson': 0.05, 'muon': 0.09, 'neutrino': 0.12})
    'proton'

2.3 Check dictionary of dictionaries

- "Dictionary of dictionaries" refer to a dictionary that has values that are dictionaries as well. Here we have keys of strings and values of dictionaries, which we call "inner dictionary". Take "Dictionary of dictionaries" as input argument. Return 1 if all "inner dictionaries" have the exact same keys, else 0.

- Condition
  - 1. input dictionaries are not empty
  - 2. All values are dictionaries
  - 3. Values of a value is not a dictionary

  - **Ex 1)**
    ```
    >>> P3({'a': {'aa':123, 'ab': [1,2]}, 'b': {'aa': 'bb', 'ab': 'cc'}})
    1   # (Explanation: All values have the same keys, {'aa', 'ab'}.)
    ```

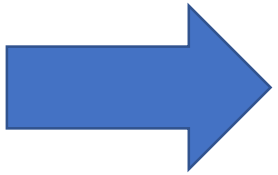
  - **Ex 2)**
    ```
    >>> P3({'A': {1: 'a', 2: 'b'}, 'B': {2: 'c', 3: 'd'}})
    0
    ```

2.4 Café menu

Input : txt file

```
Americano 3.66 4.11 4.56
CafeLatte 4.11 4.56 5.00
CafeMocha 4.55 5.00 5.45
DecafeCaffeLatte 4.38 4.82
```

menu.txt



1) Output : list of lists

```
menu('menu.txt')
```

```
[['Americano', '3.66', '4.11', '4.56'],
 ['CafeLatte', '4.11', '4.56', '5.00'],
 ['CafeMocha', '4.55', '5.00', '5.45'],
 ['DecafeCaffeLatte', '4.38', '4.82']]
```

2) Output : list of strings in reverse order

```
reverse_menu('menu.txt')
```

```
['DecafeCaffeLatte 4.38 4.82',
 'CafeMocha 4.55 5.00 5.45',
 'CafeLatte 4.11 4.56 5.00',
 'Americano 3.66 4.11 4.56']
```

Practice Time

- 조별로 소회의실에 들어가서 자유롭게 실습
  - **실습 중 문제 질문이 있다면 채팅 혹은 손들기 후 질문해도 괜찮습니다.**
- 소회의실 추가 개설
  - **앞으로는 조원이 접속하지 않았거나 조 배정을 받지 않으신 분들은 추가 개설한 소회의실에 접속해서 다른 분들과 토의해도 좋습니다.**

Thanks!

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