

DAY 3

Data collection types

in Python

Understanding the python and programming

PART I. List & Tuple

Instructor : Daneul Kim (TEAM Always Summer @ World Friends Korea)

Course Objectives of Part I

Understanding the data collection types

1. Understanding what is List and Tuple and how they are used
2. Understanding what is Dict and Set and how they are used

List and Tuples

- Data structure that can contain multiple values
- We can understand this as the list in the actual usages with values in sequences
- List could be modified however tuple cannot be modified, and we call these mutable and immutable

List

Data structure that can contain multiple values

- Think this 'List' as data structure that contains multiple values:
 - Let's say there's 1, 2, 3, 4, 5 five numbers and we want to put them in one set, than we use list
- Make the list by putting the values in [] (parentheses)
- Make the list by using the 'list()' function
- Make the list by using 'str.split()',
 - which we can make the string to list of characters (Since string itself is the multiple characters)

List

list() function, String split function

- list() function
 - Other data types could be converted into the list by using this function
- String split function
 - Converting the string to list by using the separator (which we learned in day 2 part 1)

List

list indexing

- This could be thought equivalent to the indexing of string
- Use the `[]` operator to gain the element
- `[i]` return the element with the index `i` -> `str_ = 'hello world', str_[0] = 'h'`
- As explained in day 2, using `-1`, `-2`, ... as index is possible

List

list indexing and slicing

- Indexing
 - Can access the item by using the index and update the values individually
- Slicing
 - Works similar to string slicing
 - Result of the list slicing is also the list

Tuple

Data structure that can contain multiple values

- Collection type that contains multiple values as the list
- It can't be modified (Immutable)

Tuple

Tuple unpacking

- Putting the values of tuples into variables

Exercise

- Exchange values of a and b
 - Step 1. First, declare variable a and b with values
 - Step 2. Second, use tuple unpacking to swap a and b

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PART II. Dictionary & Set

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Course Objectives of Part II

Understanding the data collection types

1. Understanding what is List and Tuple and how they are used
2. Understanding what is Dict and Set and how they are used

Dictionary and sets

- Data structures that can contain multiple values, but it works different from the list and tuple
- Keywords
 - Key -> Overlapping X
 - Value -> Overlapping O

Dictionary

Data structure with keys and values

- Data structure that have keys and values
- Keys are contained internally with hash value
- There's no order in the dictionary, hence there's no index for any of the elements in the dictionary

Dictionary

Modification and Addition

- `dictionary_variable[key] = value`
 - -> Use this for modification and addition

Dictionary

update()

- Merge two dictionaries
- If there's overlapping keys, then the transferred parameter would be overwritten

Dictionary

Key deletion

- Use del keyword
- Use pop function

Dictionary

`clear()`

- Reset all the values in the dictionary
 - -> Making it empty

Dictionary

Value access

- Access by using `dict[key]`, without key, error would be returned
- Use `.get()` function to access, and if there's no key then `None` would be returned

Dictionary

Accessing all the keys and values

- `keys()` - Only return the keys
- `values()` - only return the values
- `items()` - Return tuples of keys and values

Set

- Understanding this data structure as using only the keys from the dictionary
- Keep in mind that keys could not be overlapped
- Use `set()` to make other data structure (such as list or tuple) as a set

Set

set operations

- Equivalent to the operations in Mathematics
- It supports operations of union, intersection and difference
- It also supports to check whether one set is subset of another set