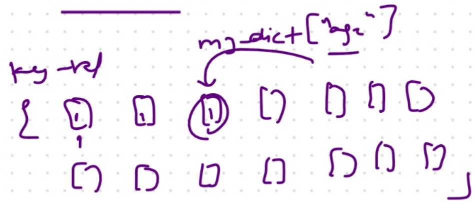
Data structures

Dictionaries : Unordered, collection of key-value pairs

Creation: Person

```
my_dict = { "name": "John", "age": 30, "city": "New york" }
```



Important points:

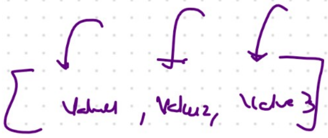
- * Dictionary keys are hashable (immutable)
- * Dictionaries are unordered in python <3.7
- * keys are unique (if we try to duplicate keys, it overwrites the existing value)
- * dictionaries are optimized for lookups by key
- * best for when you need to access values based on a unique identifier

List / Dictionary / Set Comprehensions

List / Set Comprehension

- * Concise way to create lists based on existing data

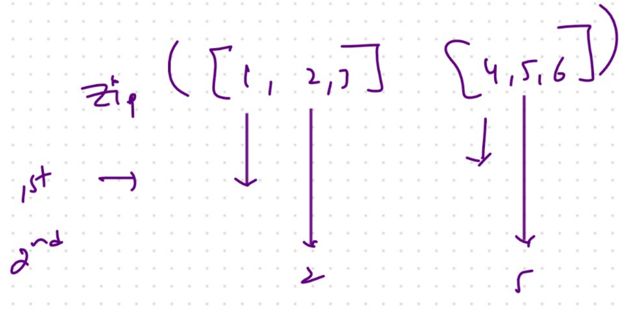
Syntax: [expression for item in iterable] (list, tuple set)



for set syntax { expression for item in iterable }

Note:

- * more concise & often faster than traditional loops
- * Can be harder to read when complex
- * generally use for a single line or operation tasks & for better readability



Dictionary Comprehensions

syntax {key-exp : value-exp for item in iterable}

Functional Programming

- Lambda function
- Map function
- Filter function

Lambda function: It is an anonymous, single-expression function in python

Key Concept:

- Define using "lambda" keyword
- Can have multiple arguments but only one expression
- Used for short, simple functions without explicitly defining them using def

Syntax:

```
lambda arguments : expression
```

Note:

→ The result of expression is automatically returned

→ Commonly we use with high-order functions like

- map
- filter }
- sorted
- reduced

Map function: This function applies a given function to all items in an iterable (eg. list, tuple ..)

[1, 2,]

Syntax   map (function , iterable)

key concept:

→ Take 2 arguments, ① function ② iterable

→ returns a map object (an iterator), which can be converted to a list, tuple ...etc.

Fiter function: The filter() function filters elements of an iterable based on condition

Syntax: filter (function, iterable)

key concepts:

→ Takes 2 arguments

① function

② iterable

→ The function should return True or False

→ returns a filter object, which can be convertable

Summary

Function	Purpose	Returns	Common Use Case
lambda	creat anonymous, single expression function	function	inline operations
map()	apply a function to each & every elements in an iterable	map object	transforming data

filter()

filter elements based on a condition

filter object

extracting elements meeting criteria