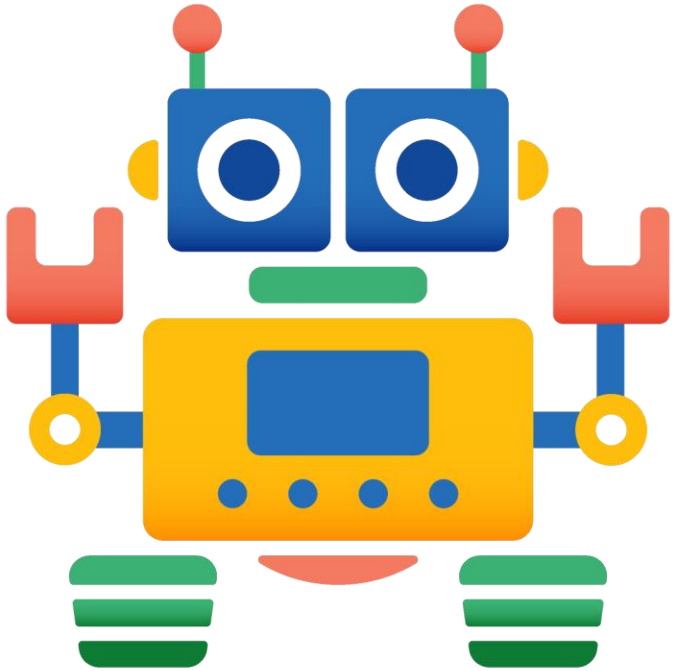

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Recap

- What are List and Tuple
- Difference between list and tuple
- Create sub list/tuple from list and tuple
- Changing a value of an element in a list
- Adding and deleting element in a list
- Basic operations of list/tuples

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Datatypes 3

Dictionaries

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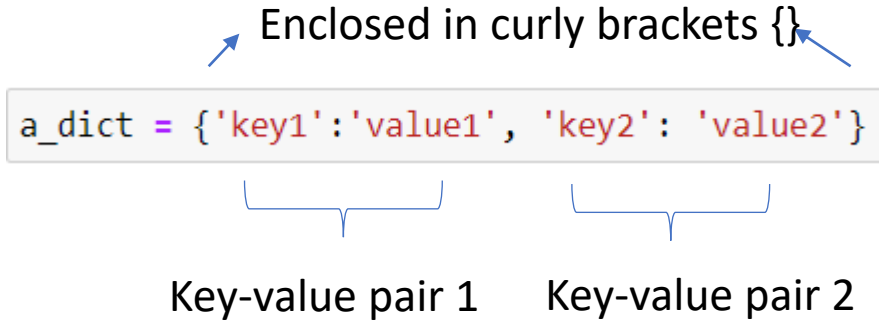
Dictionaries

- What is dictionary?

It is like a real life dictionaries having a meaning (value) to a specific word (key).

Dictionary in python stores value in key-value pair.



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Dictionaries

- Values of a dictionary are accessed by their “keys” instead of index. Just like search the words in dictionary

```
#Example
myDictionary = {
  "fruit 1": "Apple",
  "fruit 2": "Orange",
  "fruit 3": "Banana"
}
print(myDictionary)
```

```
{'fruit 1': 'Apple', 'fruit 2': 'Orange', 'fruit 3': 'Banana'}
```

```
#Example
print(myDictionary["fruit 1"])
```

```
Apple
```

Rules - Dictionaries

1. Cannot access elements by index (different from lists)

```
print(myDictionary[0]) --> WRONG
```

2. Cannot have duplicate keys

```
myDictionary = { "fruit 1": "Apple", "fruit 1": "Banana" } --> WRONG
```

Practise time!

- Answer the questions in the notebook
- Ask me at any time when you're unsure or not clear
- When all the questions are finished, call me to check :D

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Changing values - Dictionaries

- Similar to a list, values of dictionaries can also be changed in a similar way.

```
#Example
dictionary_1 = {
    "Student 1" : "Adam",
    "Student 2" : "Bernard",
    "Student 3" : "Charlie"
}
print("Before changing: ", dictionary_1)

dictionary1["Student 1"] = "Alex"
print("After changing: ", dictionary_1)
```

```
Before changing:  {'Student 1': 'Adam', 'Student 2': 'Bernard', 'Student 3': 'Charlie'}
After changing:  {'Student 1': 'Alex', 'Student 2': 'Bernard', 'Student 3': 'Charlie'}
```

Adding new key-value pairs- Dictionaries

- To add new key-value pairs, you can do it by dictionary['new_key'] = 'new_value'

```
#Example
print("Before changing: ", dictionary_1)
dictionary_1['Student 4'] = 'Derrick'
print("After changing: ", dictionary_1)
```

```
Before changing:  {'Student 1': 'Alex', 'Student 2': 'Bernard', 'Student 3': 'Charlie'}
After changing:  {'Student 1': 'Alex', 'Student 2': 'Bernard', 'Student 3': 'Charlie', 'Student 4': 'Derrick'}
```

Removing new key-value pairs- Dictionaries

- To removing new key-value pairs, you can do it by

del dictionary['key']

```
#Example
print("Before changing: ", dictionary_1)
del dictionary_1['Student 4']
print("After changing: ", dictionary_1)
```

```
Before changing:  {'Student 1': 'Alex', 'Student 2': 'Bernard', 'Student 3': 'Charlie', 'Student 4': 'Derrick'}
After changing:  {'Student 1': 'Alex', 'Student 2': 'Bernard', 'Student 3': 'Charlie'}
```

Practise time!

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Nesting - Dictionaries

- Dictionaries can be nested!
- What is nested?
  - It means a dictionary within another dictionary!
- It is very commonly used in python!

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Nesting - Dictionaries

```
#Example
nestedDict = {
    "phone 1":{
        "brand": "Samsung",
        "model": "S10",
        "year of release": 2018
    },
    "phone 2":{
        "brand": "Apple",
        "model": "iPhone10",
        "year of release": 2018
    },
    "phone 3":{
        "brand": "Huawei",
        "model": "Mate 40 Pro",
        "year of release": 2020
    }
}
print(nestedDict)
```

```
{'phone 1': {'brand': 'Samsung', 'model': 'S10', 'year of release': 2018}, 'phone 2': {'brand': 'Apple', 'model': 'iPhone10',
'year of release': 2018}, 'phone 3': {'brand': 'Huawei', 'model': 'Mate 40 Pro', 'year of release': 2020}}
```

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Nesting - Dictionaries

- How do we access its values then?

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Nesting - Dictionaries

```
#Example
nestedDict = {
    "phone 1":{
        "brand": "Samsung",
        "model": "S10",
        "year of release": 2018
    },
    "phone 2":{
        "brand": "Apple",
        "model": "iPhone10",
        "year of release": 2018
    },
    "phone 3":{
        "brand": "Huawei",
        "model": "Mate 40 Pro",
        "year of release": 2020
    }
}
```

```
print(nestedDict['phone 1'])
```

```
{'brand': 'Samsung', 'model': 'S10', 'year of release': 2018}
```

```
#Example
#To get the brand of phone 1:
print(nestedDict['phone 1']['brand'])
```

```
Samsung
```

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Practise time!

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Questions?

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Thinking question:
Does nesting only applies to dictionary?

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Todays Lesson…

- What is a dictionary
- Access the value of an element in a dictionary
- Changing a value of an element in a dictionary
- Nested dictionary

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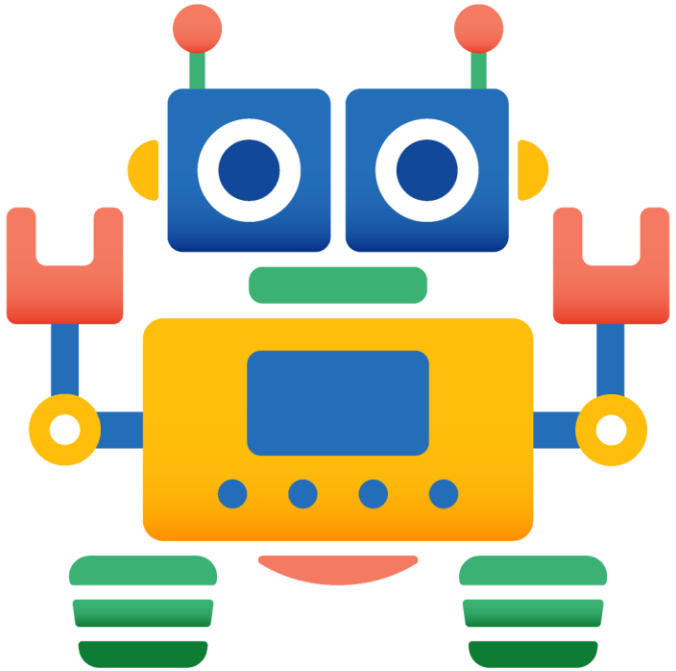

THANK YOU!