

Data Science & Artificial Intelligence

Python for Data Science

Python Collections and String Handling



Lecture No. 05



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Topics *to be covered*



- Python Collections and String Handling





RECAP

Set \rightarrow union, intersection, difference, symmetric
(mutable) difference, intersection-update, difference-update, copy

(unordered)

- Initialization
- Adding
- remove, discard, pop
- isdisjoint, issubset, issuperset
- clear, del

frozenset \rightarrow Immutable

inplace opⁿ
no methods

Dictionary

- Initialization
- Adding
- Ordered
- Indexing is done on key



DICTIONARY

Create a dictionary using fromkeys() method.

```
Students = ["Rahul", "Aditi", "Ishan", "Ravi", "Nikhil"]
```

```
dict1 = dict.fromkeys(students)
```

```
print(dict1)
```

```
dict1["Rahul"]  
= 100
```

```
{ "Rahul": 100, "Aditi": None, "Ishan": None, "Ravi": None,  
  "Nikhil": None }
```

```
dict2 = dict.fromkeys(students, 0)  
print(dict2)
```

```
{ "Rahul": 0, "Aditi": 0, "Ishan": 0, "Ravi": 0, "Nikhil": 0 }
```

dict1 = { 'a': [1, 2, 3], 'b': (4, 5, 6), 'c': {9, 10}, 'd': {10: 20, 30: 40} }

list tuple set dict

values \Rightarrow can be of any data type
values can be duplicate also
values are also changeable

dict2 = { [1, 2, 3] : 'a' }

list

dict3 = { (1, 2, 3) : 'a' }

Keys cannot have mutable objects (list, set, dict)

Keys will have only immutable values

Keys cannot be duplicate

Keys can only be added or removed but cannot be changed

dict2 = { "Rohit": 47.9 , "Virat": 51.7 , "Sachin": 55 }

x = (1, 2, 3, [4, 5])

print(len(dict2)) = 3

dict3 = { (1, 2, 3, [4, 5]) : 'a' }

dict2.keys() ⇒ will give all the keys

dict2.values() ⇒ will give all the values

dict2.items() ⇒ will give all the key-value pairs

["Rohit", "Virat", "Sachin"]

[47.9, 51.7, 55]

[("Rohit", 47.9), ("Virat", 51.7),
("Sachin", 55)]


```
for i in dict2.keys():  
    print(i)
```

"Rohit"
"Virat"
"Sachin"

```
for v in dict2.values():  
    print(v, end=",")
```

47.9

47.9, 51.7, 55

51.7

```
for k, v in dict2.items():  
    print("Key: ", k, "Value: ", v)
```

Accessing the elements

dict1 = {'a': 1, 'b': 7, 'c': 9, 'd': 100}

print(dict1['b']) = 7

print(dict1['e']) ⇒ error

dict1.get('a') ⇒ 1

print(dict1.get('e')) ⇒ None

print(dict1.get('e', -1)) ⇒ -1

Updation in dictionary

```
dict3 = {"name": "Shivam", "age": 21, "prof": "student"}
```

⇒ dict3["age"] = 25

⇒ dict3.update(name = "Nikhil", age = 26)

print(dict3)

```
{"name": "Nikhil", "age": 26, "prof": "student"}
```

```
dict2 = {"salary": 10000, "education": "B.Tech"}
```

⇒ dict3.update(dict2)

print(dict3)

```
{"name": "Nikhil", "age": 26, "prof": "student", "salary": 10000, "education": "B.Tech"}
```


dict1 = {"a": 1, "b": 2, "c": 3}

"a" in dict1 \Rightarrow True

"d" not in dict1 \Rightarrow True

[range]

Deletion in Dictionary

dict2 = { 1: "ab", 2: "hello", 10: "world" }

del dict2[2]

\Downarrow
It will delete the key-value pair where key=2

del dict2

print(dict2)

\Downarrow

error

dict2.clear()

print(dict2)

{ }

item = dict2.popitem()

\Downarrow

It will delete the last key-value of the dict
(10, "world")

$\xrightarrow{\text{value}}$ $\xrightarrow{\text{error}}$

= dict2.pop()

\downarrow key
v = dict2.pop(2)

print(v)

"hello"

$x = [1, 2, 2, 3, 4, 4, 5]$

$y = \{i \text{ for } i \text{ in } x \text{ if } x.\text{count}(i) == 1\}$

$\text{print}(\text{sorted}(y)) \Rightarrow [1, 3, 5]$

$y = \{1, 3, 5\}$

Q2)

$d1 = \{'a': 1, 'b': 2\}$

$d2 = \{'b': 3, 'c': 4\}$

$d3 = d1 | d2$

$d3 = \{'a': 1, 'b': 2^3, 'c': 4\}$

$\{'a': 1, 'b': 3, 'c': 4\}$

1) Once = "umbr"
repeat = "ella"
u = Once + (repeat + " ") * 4
= "umbr" + ("ella" + " ") * 4
= umbrella ella ella ella

2) which of the following is valid variable?

☒ a) For for

☒ b) While while

☒ c) In in

☐ d) 123In

a, b, c

s1 = "mich u rock"

s2 = "i rule mich"

```
if len(s1) == len(s2):
```

```
    for char1 in s1:
```

```
        for char2 in s2:
```

```
            if char1 == char2:
```

```
                print("GATE DA")
```

```
                break
```

How many times
"GATE DA" will be
printed?

⑦ GATE DA ✓

⑩

```
L = ["life", "answers", 42, 00 "world"]
```

```
for v in L:
```

```
    if v == 0:
```

```
        L[v] = "hello"
```

```
    elif v == 42:
```

```
        L[3] = "world"
```

```
        L[1] = 0
```

```
print(L)
```

```
["life", 0, 42, "world"]
```

Q1 what is the value of L3 after executing all the operations given below:

L₁ = ['se']

L₂ = ['mi']

L₃ = ['do']

L₄ = L₁ + L₂ = L₄ = ['se', 'mi']

L₃.extend(L₄) ⇒ L₃ = ['do', 'se', 'mi']

L₃.sort() ⇒ L₃ = ['do', 'mi', 'se']

del L₃[0] L₃ = ['mi', 'se']

L₃.append(['fo', 'la']) L = ['mi', 'se', ['fo', 'la']]

$\left\{ \begin{array}{l} L = 3 \\ \text{for } i \text{ in } \underline{\text{len}(L)}: \\ \quad \text{print}(i) \end{array} \right.$



Summary

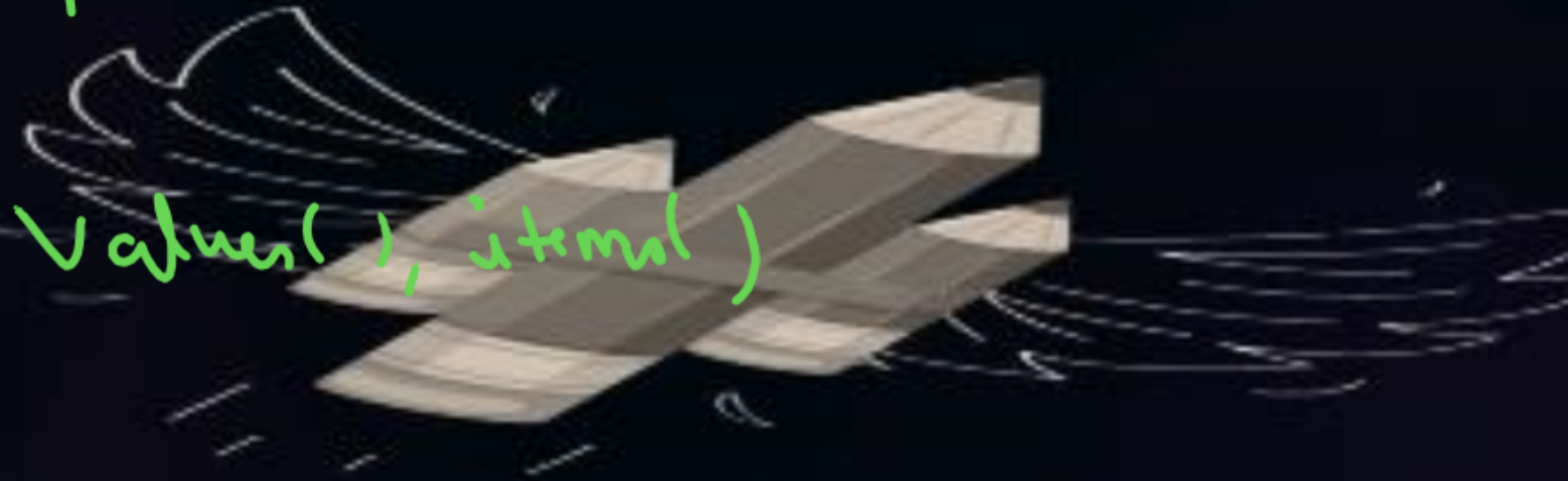


Dict — a ceering
— updation
— deletion
— fromkey()
— keys(), values(), items()

9-12

8-11

Problems



THANK - YOU

