TOPIC : Artificial Intelligence with Python - INMOVIDU - Jahnavi N

PYTHON PROGRAMMIG

LISTS

A list is a data structure in Python that is a mutable, or changeable, ordered sequence of elements.mutable-Once you create it, elements can be modified, individual values can be replaced, even the order of the elements can be changed.

In [1]:
```
l=[]
print(type(l))
```

```
<class 'list'>
```

In [2]:
```
l=[1,"hai",10,20]
print(l)
```

```
[1, 'hai', 10, 20]
```

In [3]:
```
print(*l)
```

```
1 hai 10 20
```

In [4]:
```
print(l[3])
```

```
20
```

In [5]:
```
print(l[1:3])
```

```
['hai', 10]
```

In [6]:
```
l=[1,2,3,4]
```

In [7]:
```
l[4:0:-1]
```

Out[7]:
```
[4, 3, 2]
```

In [8]:
```
print(l)
```

```
[1, 2, 3, 4]
```

In [9]:
```
# [start:end:step]
print(l[3:1:-1])
```

```
[4, 3]
```

In [10]:
```
print(len(l))
```

```
4
```

append , insert

In [11]:
```
l=[1,2,3]
```

In [12]:
```
l.append("hello")
```

In [13]:
```
print(l)
```

```
[1, 2, 3, 'hello']
```

In [14]:
```
l.insert(3,"hhhhhhhhaiiiiiii")
```

In [15]:
```
print(l)
```

```
[1, 2, 3, 'hhhhhhhhaiiiiiii', 'hello']
```

In [16]:
```
l=[2,12,3]
l.insert(8,23)
```

In [17]:
```
print(l)
```

```
[2, 12, 3, 23]
```

In [18]:
```
l=[]
x=int(input("enter size"))
for i in range(0, x):
    x1=int(input())
    l.append(x1)
print(l)
```

```
enter size2
1
2
[1, 2]
```

append

In [19]:
```
s=list(map(int,input().split(",")))
```

```
12,121,2,2,3,2
```

In [20]:
```
print(s)
```

```
[12, 121, 2, 2, 3, 2]
```

remove , delete

In [21]:
```
l=[1,2,2,3,23,22,12,121]
l.remove(2)
```

In [22]:
```
print(l)
```

```
[1, 2, 3, 23, 22, 12, 121]
```

In [23]:
```
del l[4]
```

In [24]:
```
print(l)
```

```
[1, 2, 3, 23, 12, 121]
```

In [25]:
```
del l[3:]
```

In [26]:
```
print(l)
```

```
[1, 2, 3]
```

In [27]:
```
l=[1,2,34,5,5]
```

In [28]:
```
l=[1,23,3,65,6]
del l[2:4]
```

In [29]:
```
print(l)
```

```
[1, 23, 6]
```

count , index

In [30]:
```
ll=[2,3,3,3,12,121,1]
```

In [31]:
```
print(ll)
```

```
[2, 3, 3, 3, 12, 121, 1]
```

In [32]:
```
print(ll.count(3))
```

```
3
```

In [33]:
```
print(ll.index(12))
```

```
4
```

pop

In [34]:
```
ll=[12,12,34]
ll.pop()
print(ll)
```

```
[12, 12]
```

extend

In [35]:
```
l1=[1,2,3,4]
l2=[6,7,8,9]
```

```
l1.extend([1,2,34,4])
print(l1)
```

```
[1, 2, 3, 4, 1, 2, 34, 4]
```

copy

In [36]:
```
l1=[23,21,1232,3]
l2=l1
print(l2)
```

```
[23, 21, 1232, 3]
```

In [37]:
```
l1.pop()
print(l1)
```

```
[23, 21, 1232]
```

In [38]:
```
print(l2)
```

```
[23, 21, 1232]
```

In [39]:
```
l1=[1,2,33,2,3]
l2=l1.copy()
l1.pop()
print(l1)
```

```
[1, 2, 33, 2]
```

In [40]:
```
l1=[1,12,1,2]
l2=l1[0:]
l1.pop()
print(l1)
```

```
[1, 12, 1]
```

In [41]:
```
print(l2)
```

```
[1, 12, 1, 2]
```

In [42]:
```
print(l2)
```

```
[1, 12, 1, 2]
```

sort , reverse

In [43]:
```
l=[2,3,4,2]
l.sort()
print(l)
```

```
[2, 2, 3, 4]
```

In [44]:
```
l=[11,2,3,4]
l.sort(reverse=False)
```

In [45]:
```
print(l)
```

```
[2, 3, 4, 11]
```

In [46]:
```
l=[1,23,2,24,23]
l.reverse()
print(l)
```

```
[23, 24, 2, 23, 1]
```

In [47]:
```
l=[1,2,3,4,4,3,22,2,2]
for i in l:
    print(i,end=" ")
```

```
1 2 3 4 4 3 22 2 2
```

In [48]:
```
l=[1,13,13,2,3,4]
for i in range(0,len(l)):
    print(l[i])
```

```
1
13
13
2
3
4
```

TUPLES

Tuples are used to store multiple items in a single variable , but they are immutable that is they can be changed as lists

In [49]:
```
t=(1,3,5,7,7,10)
print(t[3])
```

```
7
```

In [50]:
```
l=[1,2,4]
l[0]=24
print(l)
```

```
[24, 2, 4]
```

In [51]:
```
# we get error
t[2]=10
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-51-20e8daab0cc8> in <module>
      1 # we get error
----> 2 t[2]=10

TypeError: 'tuple' object does not support item assignment
```

In [52]:
```
x = (1 ,3 ,4 )
y = list(x)
y[1] = 2
x = tuple(y)
print(x)
```

```
(1, 2, 4)
```

In [53]:
```
t=(1,2,3,4,4)
print(t[2:])
```

```
(3, 4, 4)
```

In [54]:
```
t1=(12,21,23,34,4)
t3=t1+t
print(t3)
```

```
(12, 21, 23, 34, 4, 1, 2, 3, 4, 4)
```

In [55]:
```
for i in t3:
    print(i)
```

```
12
21
23
34
4
1
2
3
4
4
```

SETS

set is unordered collection of multiple items (these are unindexed) Set items are unordered, unchangeable, and do not allow duplicate values.

In [56]:
```
s={1,2,2,33,2}
print(s)
```

```
{1, 2, 33}
```

In [57]:
```
s.add(100)
print(s)
```

```
{1, 2, 100, 33}
```

In [58]:
```
s.remove(33)
print(s)
```

```
{1, 2, 100}
```

In [59]:
```
s1={1,2,3,7,2}
s2={5,6,7,2}
s1.update(s2)
print(s1)
```

```
{1, 2, 3, 5, 6, 7}
```

In [60]:
```
l=[12,11,23,11,111,1]
s1.update(l)
print(s1)
print(type(s1))
```

```
{1, 2, 3, 5, 6, 7, 11, 12, 111, 23}
<class 'set'>
```

In [61]:
```
s={1,2,3}
l=list(s)
print(l[:])
```

```
[1, 2, 3]
```

In [62]:
```
print(s)
for i in s:
    print(i)
```

```
{1, 2, 3}
1
2
3
```

In [63]:
```
print(s[0])
#error
```

```
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-63-7a44b71ca4f2> in <module>
----> 1 print(s[0])
      2 #error

TypeError: 'set' object is not subscriptable
```

In [64]:
```
print(type(s1))
```

```
<class 'set'>
```

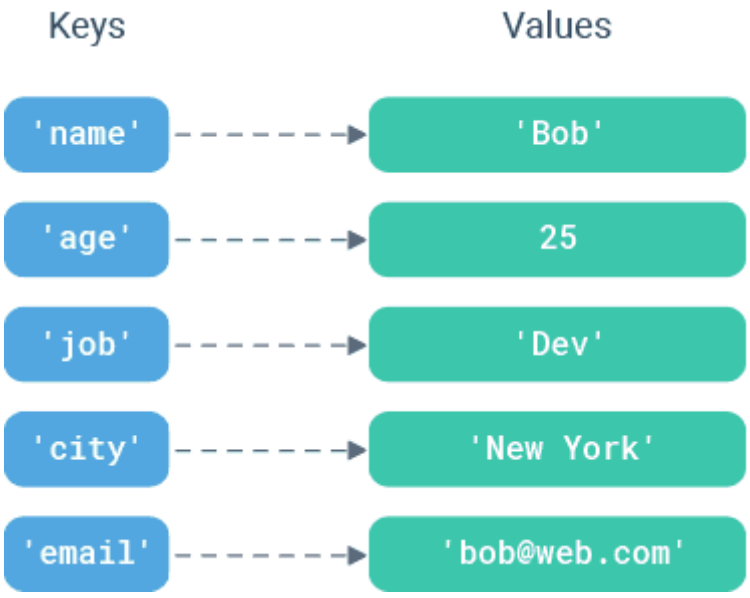
Dictionaries

A dictionary consists of a collection of key-value pairs. Each key-value pair maps the key to its associated value.

In [65]:
```
d = {1: 'a', 2: 'b', 3: 'c', 4: 'd'}
```

In [66]:
```
from IPython import display
display.Image("Dictionary-Key-Value-Pairs-Illustration.png")
```

Out[66]:



In [67]:
```
print(d)
```

```
{1: 'a', 2: 'b', 3: 'c', 4: 'd'}
```

In [68]:
```
print(type(d))
```

```
<class 'dict'>
```

In [69]:
```
d[3]
```

Out[69]:
```
'c'
```

In [70]:
```
d[5]="hai"
```

In [71]:
```
print(d)
```

```
{1: 'a', 2: 'b', 3: 'c', 4: 'd', 5: 'hai'}
```

In [72]:
```
d={'hai':1, 'hello':[2,3]}
d['namaste']=3
print(d)
```

```
{'hai': 1, 'hello': [2, 3], 'namaste': 3}
```

In [73]:
```
d['namaste']=8
print(d)
```

```
{'hai': 1, 'hello': [2, 3], 'namaste': 8}
```

In [74]:
```
Dict = dict([(1,'hai'), (2, 'buddies')])
```

In [75]:
```
print(Dict)
```

```
{1: 'hai', 2: 'buddies'}
```

In [76]:
```
Dict[2]="people"
print(Dict)
```

```
{1: 'hai', 2: 'people'}
```

In [77]:
```
del Dict[1]
```

In [78]:
```
print(Dict)
```

```
{2: 'people'}
```

In [79]:
```
print(d)
print(d.keys())
```

```
{'hai': 1, 'hello': [2, 3], 'namaste': 8}
dict_keys(['hai', 'hello', 'namaste'])
```

In [80]:
```
for key in d:
    print(key )
```

```
hai
```

```
hello
namaste
```

In [81]:
```
for val in d.values():
    print(val)
```

```
1
[2, 3]
8
```

In [1]:
```
d={}
l=int(input("enter lenth"))
for i in range(0,l ):
    x=int(input("enter key "))
    y=input("enter value")
    d[x]=y
```

```
enter lenth2
enter key 1
enter valuehai
enter key 2
enter valuehello
```

In [2]:
```
print(d)
```

```
{1: 'hai', 2: 'hello'}
```

In [3]:
```
for key,val in d.items():
    print(key, val)
```

```
1 hai
2 hello
```

In [ ]:
```

```