List

In [ ]:
```
# Adding element in a list
# .append('value')
# .insert(position, 'value')
# .extend('list')
```

In [32]:
```
my_list=["Afnan", "Naim",True, 2]     #[]=square bracket
my_list
```
Out[32]:
```
['Afnan', 'Naim', True, 2]
```

In [3]:
```
type(my_list)
```
Out[3]:
```
list
```

In [10]:
```
subject=[]
```

In [47]:
```
subject.append("Statistics")
```

In [48]:
```
subject
```
Out[48]:
```
['Statistics',
 'Physics',
 'Sociology',
 'Chemistry',
 True,
 2,
 ['Afnan', 'Naim', 'Statistics', True, 2],
 'Statistics']
```

In [28]:
```
subject
```
Out[28]:
```
['Statistics',
 'Physics',
 'Math',
 'Sociology',
 'Chemistry',
 'Afnan',
 'Naim',
 'Statistics',
 True,
 2]
```

In [21]:
```
subject.append("Chemistry")
```

In [23]:
```
subject.insert(2 ,"Math")
```

In [58]:
```
subject.extend(my_list)
```

In [ ]:

In [43]:
```
print(subject)
```
```
['Statistics', 'Physics', 'Sociology', 'Chemistry', 'Statistics', True, 2, ['Afnan', 'Naim', 'Statistics', True, 2]]
```

In [ ]:
```
# Removing a element from list
# .remove('value')
# .pop(position) .pop() will take 1 argument
```

In [55]:
```
subject.remove(2)
subject
```
Out[55]:
```
['Statistics',
 'Physics',
 'Sociology',
 'Chemistry',
 ['Afnan', 'Naim', 'Statistics', True, 2],
 'Statistics']
```

In [46]:
```
subject.pop(4)
subject
```
Out[46]:
```
['Statistics',
 'Physics',
 'Sociology',
 'Chemistry',
 True,
 2,
 ['Afnan', 'Naim', 'Statistics', True, 2]]
```

In [56]:
```
popped_item=subject.pop(1)
subject
```
Out[56]:
```
['Statistics',
 'Sociology',
 'Chemistry',
 ['Afnan', 'Naim', 'Statistics', True, 2],
 'Statistics']
```

In [57]:
```
popped_item
```
Out[57]:
```
'Physics'
```

In [59]:
```
subject
```
Out[59]:
```
['Statistics',
 'Sociology',
 'Chemistry',
 ['Afnan', 'Naim', 'Statistics', True, 2],
 'Statistics',
 'Afnan',
 'Naim',
 True,
 2]
```

In [60]:
```
new_sub=["Statistics","Mathmatics","Biology","Chemistry"]
new_sub.extend(my_list)
new_sub
```
Out[60]:
```
['Statistics', 'Mathmatics', 'Biology', 'Chemistry', 'Afnan', 'Naim', True, 2]
```

In [61]:
```
len(new_sub)
```
Out[61]:
```
8
```

In [62]:
```
new_sub.reverse()
new_sub
```
Out[62]:
```
[2, True, 'Naim', 'Afnan', 'Chemistry', 'Biology', 'Mathmatics', 'Statistics']
```

In [68]:
```
new_sub.remove(True)
new_sub
```
Out[68]:
```
['Naim', 'Afnan', 'Chemistry', 'Biology', 'Mathmatics', 'Statistics']
```

In [69]:
```
new_sub.sort()
new_sub
```
Out[69]:
```
['Afnan', 'Biology', 'Chemistry', 'Mathmatics', 'Naim', 'Statistics']
```

In [70]:
```
new_sub.sort(reverse= True)
new_sub
```
Out[70]:
```
['Statistics', 'Naim', 'Mathmatics', 'Chemistry', 'Biology', 'Afnan']
```

In [75]:
```
a= sorted(new_sub)
a
```
Out[75]:
```
['Afnan', 'Biology', 'Chemistry', 'Mathmatics', 'Naim', 'Statistics']
```

In [76]:
```
num_list=list(range(1,6))
num_list
```
Out[76]:
```
[1, 2, 3, 4, 5]
```

In [77]:
```
new_sub1= new_sub[:5]    #list slice
new_sub1
```
Out[77]:
```
['Statistics', 'Naim', 'Mathmatics', 'Chemistry', 'Biology']
```

In [78]:
```
new_sub1=new_sub[3:4]
new_sub1
```
Out[78]:
```
['Chemistry']
```

In [79]:
```
new_sub
```
Out[79]:
```
['Statistics', 'Naim', 'Mathmatics', 'Chemistry', 'Biology', 'Afnan']
```

In [88]:
```
new_sub[5]="Botany"
new_sub
```
Out[88]:
```
['Statistics', 'Naim', 'Mathmatics', 'Chemistry', 'Biology', 'Botany']
```

In [4]:
```
print(new_sub.index("Naim"))
```
```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_18252\559424089.py in <module>
----> 1 print(new_sub.index( 'Botany'))

NameError: name 'new_sub' is not defined
```

In [5]:
```
print("Zoology" in new_sub)
```
```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_18252\4272402847.py in <module>
----> 1 print("Zoology" in new_sub)

NameError: name 'new_sub' is not defined
```

In [84]:
```
new_sub
```
Out[84]:
```
['Statistics', 'Naim', 'Mathmatics', 'Chemistry', 'Biology', 'Botany']
```

In [85]:
```
for items in new_sub:
    print(items)
```
```
Statistics
Naim
Mathmatics
Chemistry
Biology
Botany
```

In [86]:
```
for index,items in enumerate(new_sub):
    print(index,items)
```
```
0 Statistics
1 Naim
2 Mathmatics
3 Chemistry
4 Biology
5 Botany
```

In [87]:
```
for index,items in enumerate(new_sub, start=1):
    print(index,items)
```
```
1 Statistics
2 Naim
3 Mathmatics
4 Chemistry
5 Biology
6 Botany
```

In [ ]:
```
sub=["a","w"]
```

Tuple

In [89]:
```
tup=("Bangdesh","Pakistan","Nepal",1)                    # tuple immatuable
tup
```
Out[89]:
```
('Bangdesh', 'Pakistan', 'Nepal', 1)
```

In [90]:
```
type(tup)
```
Out[90]:
```
tuple
```

In [91]:
```
tup_list=list(tup)
tup_list
```
Out[91]:
```
['Bangdesh', 'Pakistan', 'Nepal', 1]
```

In [92]:
```
tup_list.append("Afnan")
tup_list
```
Out[92]:
```
['Bangdesh', 'Pakistan', 'Nepal', 1, 'Afnan']
```

In [93]:
```
Tup= tuple(tup_list)
Tup
```
Out[93]:
```
('Bangdesh', 'Pakistan', 'Nepal', 1, 'Afnan')
```

Set & Dictionary

In [2]:
```
#set un ordered TEXTURE
my_set= {'Rafsan','Robin','Jahid','Abdul','Bahar'}
my_set
```
Out[2]:
```
{'Abdul', 'Bahar', 'Jahid', 'Rafsan', 'Robin'}
```

In [6]:
```
A = {'Math','Statistics','Physics','ict','Chemistry'}
B = {'History','English','Economics','ict','Chemistry'}
```

In [ ]:
```
# intersection()
# difference()
# union()
```

In [7]:
```
print(A.intersection(B))
```
```
{'ict', 'Chemistry'}
```

In [10]:
```
print(A.difference(B))
```
```
{'Math', 'Statistics', 'Physics'}
```

In [11]:
```
print(B.difference(A))
```
```
{'English', 'History', 'Economics'}
```

In [13]:
```
print(A.union(B))
```
```
{'English', 'Statistics', 'Chemistry', 'History', 'ict', 'Physics', 'Math', 'Economics'}
```

In [14]:
```
print(B.union(A))
```
```
{'English', 'History', 'Chemistry', 'Statistics', 'ict', 'Physics', 'Math', 'Economics'}
```

Dictionary

In [15]:
```
# key, value pair
my_dict={'name':'Afnan',
       'age':'23',
       'sub':'Statistics'
       }
my_dict
```
Out[15]:
```
{'name': 'Afnan', 'age': '23', 'sub': 'Statistics'}
```

In [16]:
```
type(my_dict)
```
Out[16]:
```
dict
```

In [17]:
```
my_dict['name']
```
Out[17]:
```
'Afnan'
```

In [18]:
```
my_dict['age']
```
Out[18]:
```
'23'
```

In [21]:
```
my_dict['phone']= '01640631189'
```

In [22]:
```
my_dict
```
Out[22]:
```
{'name': 'Afnan', 'age': '23', 'sub': 'Statistics', 'phone': '01640631189'}
```

In [23]:
```
my_dict['nid']='158353685200'
```

In [24]:
```
my_dict
```
Out[24]:
```
{'name': 'Afnan',
 'age': '23',
 'sub': 'Statistics',
 'phone': '01640631189',
 'nid': '158353685200'}
```

In [25]:
```
print(my_dict.get('roll','roll not exist'))
```
```
roll not exist
```

In [29]:
```
my_dict['roll']='22122'
```

In [30]:
```
print(my_dict.get('roll','roll not exist'))
```
```
22122
```

In [33]:
```
my_dict.update({
    'name':'Hasan',
    'sub':'Physics',
    'phone':'0152455755566'               ## dictionary update system
})
my_dict
```
Out[33]:
```
{'name': 'Hasan',
 'age': '23',
 'sub': 'Physics',
 'phone': '0152455755566',
 'nid': '158353685200',
 'roll': '22122'}
```

In [39]:
```
del my_dict['phone']
```
```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_348\3669393986.py in <module>
----> 1 del my_dict['phone']
      2

KeyError: 'phone'
```

In [38]:
```
my_dict
```
Out[38]:
```
{'name': 'Hasan',
 'age': '23',
 'sub': 'Physics',
 'nid': '158353685200',
 'roll': '22122'}
```

In [41]:
```
del_age=my_dict.pop('age')
del_age
```
```
---------------------------------------------------------------------------
KeyError                                  Traceback (most recent call last)
~\AppData\Local\Temp\ipykernel_348\3816600847.py in <module>
----> 1 del_age=my_dict.pop('age')
      2 del_age

KeyError: 'age'
```

In [42]:
```
del_age
```
Out[42]:
```
'23'
```

In [43]:
```
my_dict
```
Out[43]:
```
{'name': 'Hasan', 'sub': 'Physics', 'nid': '158353685200', 'roll': '22122'}
```

In [44]:
```
print(len(my_dict))
```
```
4
```

In [45]:
```
print(my_dict.keys())
```
```
dict_keys(['name', 'sub', 'nid', 'roll'])
```

In [46]:
```
print(my_dict.values())
```
```
dict_values(['Hasan', 'Physics', '158353685200', '22122'])
```

In [53]:
```
print(my_dict.items())
```
```
dict_items([('name', 'Hasan'), ('sub', 'Physics'), ('nid', '158353685200'), ('roll', '22122')])
```

In [54]:
```
for key in my_dict:
    print(key)
```
```
name
sub
nid
roll
```

In [56]:
```
for values in my_dict:
    print(values)
```
```
name
sub
nid
roll
```

In [58]:
```
for key, value in my_dict.items():
    print(key,value)
```
```
name Hasan
sub Physics
nid 158353685200
roll 22122
```

In [59]:
```
my_dict
```
Out[59]:
```
{'name': 'Hasan', 'sub': 'Physics', 'nid': '158353685200', 'roll': '22122'}
```

In [66]:
```
my_dict['age']='23'
```

In [67]:
```
my_dict
```
Out[67]:
```
{'name': 'Hasan',
 'sub': 'Physics',
 'nid': '158353685200',
 'roll': '22122',
 'age': '23'}
```

In [69]:
```
my_dict['student type']='Regular'
my_dict
```
Out[69]:
```
{'name': 'Hasan',
 'sub': 'Physics',
 'nid': '158353685200',
 'roll': '22122',
 'age': '23',
 'student type': 'Regular'}
```

In [78]:
```
for key,value in my_dict.items():
    print(key,value)
```
```
name Afnan
sub Statistics
nid 52652656
roll 22122
age 23
student type Reguler
name : Afnan
sub : Statistics
nid : 52652656
roll : 22122
age : 23
student type : Reguler
```

In [80]:
```
my_dict.update({'name':'Afnan',
               'sub':'Statistics',
               'nid':'52652656',
               'roll':'22122',
               'age':'23',
               'student type':'Reguler'
               })
my_dict
```
Out[80]:
```
{'name': 'Afnan',
 'sub': 'Statistics',
 'nid': '52652656',
 'roll': '22122',
 'age': '23',
 'student type': 'Reguler',
 'name :': 'Afnan',
 'sub :': 'Statistics',
 'nid :': '52652656',
 'roll :': '22122',
 'age :': '23',
 'student type :': 'Reguler'}
```

In [86]:
```
del my_dict['student type']
```

In [87]:
```
my_dict
```
Out[87]:
```
{'name :': 'Afnan',
 'sub :': 'Statistics',
 'nid :': '52652656',
 'roll :': '22122',
 'age :': '23',
 'student type :': 'Reguler'}
```

In [89]:
```
for key, value in my_dict.items():
    print(key,value)
```
```
name : Afnan
sub : Statistics
nid : 52652656
roll : 22122
age : 23
student type : Reguler
```

In [91]:
```
# for index,key in enumerate(my_dict, start=1):
#     print(index,key)
```
```
1 name :
2 sub :
3 nid :
4 roll :
5 age :
6 student type :
```

In [92]:
```
# for index,items in enumerate(my_dict,start=1):
#     print(index,items)
```
```
1 name :
2 sub :
3 nid :
4 roll :
5 age :
6 student type :
```

In [6]:
```
# enumerate
# while
# for
# def
# del
# str
# int
# tuple
# list
# bool
# complex
# None
# and
# or
# not
# float
# in
# print
```

In [5]:
```
for i in range(10):
    print("Allah")
```
```
Allah
Allah
Allah
Allah
Allah
Allah
Allah
Allah
Allah
Allah
```

In [ ]: