Name of Student : AHMED ALI ANSARI **ID No : 1402-2020**

Task :

1. **Write a Python program to convert JSON data to Python object ?**

Answer :

```
In [20]: # Write a Python program to convert JSON data to Python object.
import json
json_obj =  '{ "Name":"AHMED ALI ANSARI", "Semester":"VI", "ID":1402 }'
python_obj = json.loads(json_obj)
print("\nJSON data:")
print(python_obj)
print("\nName: ",python_obj["Name"])
print("Semester: ",python_obj["Semester"])
print("ID: ",python_obj["ID"])
```

```
JSON data:
{'Name': 'AHMED ALI ANSARI', 'Semester': 'VI', 'ID': 1402}

Name:  AHMED ALI ANSARI
Semester:  VI
ID:  1402
```

1. **Write a Python program to convert Python object to JSON data.?**

Answer :

```
In [21]: #Write a Python program to convert Python object to JSON data.
import json
python_obj =  { "Name":"AHMED ALI ANSARI", "Semester":"VI", "ID":1402 }
jasobj = json.dumps(python_obj)
print("\nJSON data:")
print(jasobj)

with open('jasobj.json', 'w') as f:
  print("The json file is created")
```

```
JSON data:
{"Name": "AHMED ALI ANSARI", "Semester": "VI", "ID": 1402}
The json file is created
```

3. **Write a Python program to create a new JSON file from an existing JSON file.**

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Answer:

```
In [33]: #3. Write a Python program to create a new JSON file from

import json

with open('states.json') as f:
  state_data= json.load(f)

for state in state_data['states']:
  del state['area_codes']

with open('new_states.json', 'w') as f:
  json.dump(state_data, f, indent=2)
```

new_states.json


```
{
  "states": [
    {
      "name": "Alabama",
      "abbreviation": "AL"
    },
    {
      "name": "Alaska",
      "abbreviation": "AK"
    },
    {
      "name": "Arizona",
      "abbreviation": "AZ"
    },
    {
      "name": "Arkansas",
      "abbreviation": "AR"
    },
    {
      "name": "Washington",
      "abbreviation": "WA"
    },
    {
      "name": "West Virginia",
      "abbreviation": "WV"
    },
    {
      "name": "Wisconsin",
      "abbreviation": "WI"
    },
    {
      "name": "Wyoming",
      "abbreviation": "WY"
    }
  ]
}
```


4. **Write a Python program to convert Python dictionary object (sort by key) to JSON data. Print the object members with indent level 4.**

Answer:

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In [44]:
```
#. Write a Python program to convert Python dictionary
import json
j_str = {'4': 5, '6': 7, '1': 3, '2': 4}
print("Original String:")
print(j_str)
print("\nJSON data:")
print(json.dumps(j_str, sort_keys=True, indent=4))
```

```
Original String:
{'4': 5, '6': 7, '1': 3, '2': 4}

JSON data:
{
    "1": 3,
    "2": 4,
    "4": 5,
    "6": 7
}
```

5. **Write a NumPy program to create a 3x3 matrix with values ranging from 2 to 10.**

Answer:

In [45]:
```
#Write a NumPy program to create a 3x3 matr

import numpy as np
Matrix =  np.arange(2, 11).reshape(3,3)
print(Matrix)
```

```
[[ 2  3  4]
 [ 5  6  7]
 [ 8  9 10]]
```

6. **Write a NumPy program to convert a list and tuple into arrays.**

Answer:

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In [46]:
```
#6. Write a NumPy program to convert a list and tuple i

import numpy as np
my_list = [1, 2, 3, 4, 5, 6, 7, 8]
print("my_list: ",my_list);
print("List to array: ")
print(np.asarray(my_list))
my_tuple = ([8, 4, 6], [1, 2, 3])
print("my_tuple: ",my_tuple)
print("Tuple to array: ")
print(np.asarray(my_tuple))
```

```
my_list:  [1, 2, 3, 4, 5, 6, 7, 8]
List to array:
[1 2 3 4 5 6 7 8]
my_tuple:  ([8, 4, 6], [1, 2, 3])
Tuple to array:
[[8 4 6]
 [1 2 3]]
```

7. **Write a Pandas program to add, subtract, multiple and divide two Pandas Series.**

Answer:

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In [49]:
```
#Write a Pandas program to add, subtract, multiple and divide t

import pandas as pd
val1 = pd.Series([2, 4, 6, 8, 10])
val2 = pd.Series([1, 3, 5, 7, 9])
val = val1 + val2
print("Addition of  two Series :")
print(val)
print("Subtraction of two Series :")
val = val1 - val2
print(val)
print("Multiplication of two Series :")
val = val1 * val2
print(val)
print("Dividision of Two Serires :")
val = val1 / val2
print(val)
```

```
Addition of  two Series :
0      3
1      7
2     11
3     15
4     19
dtype: int64
Subtraction of two Series :
0     1
1     1
2     1
3     1
4     1
dtype: int64
Multiplication of two Series :
0      2
1     12
2     30
3     56
4     90
dtype: int64
Dividision of Two Serires :
0    2.000000
1    1.333333
2    1.200000
3    1.142857
4    1.111111
dtype: float64
```