About Serialization and Deserialization

In [ ]:
```
Object Serialization --> The process of converting an object from python to any other supported file
                         over the network supported from is known as Object serialization.

Object Deserialization --> The process of converting an object of any supported file to any python objectover the network
                           supported from is known as Object desserialization
For Seralization and Deserialization we can use:
    1.Pickle(Machine learning apps)  --> .pkl
    2.JSON   --> dictionary
    3.YAML
```

About JSON

In [ ]:
```
Json --> Javascript object notation
     --> Any programming language can understand json . hence json is the most commonly Used message format for applications
         irrespective of programming languages and platform.It is very important to provide interportability between the
         application.
     --> Json is also very useful to store the data
```

WHAT IS JSON?

In [ ]:
```
WHAT IS JSON?

PYTHON                                                  JAVASCRIPT

INT                                                     NUMBER
FLOAT                                                   NUMBER
LIST                                                    ARRAY
TRUE                                                    true
False                                                   false
str                                                     string
None                                                    null
Dictionary                                              object(JSON)

#time complexity of dictionary is o(1) constant time.
```

Why Json?

In [ ]:
```
Why json is more trending:
    1.Light weighted
    2.Human Readable
```

How to Work on Json Using Python

In [ ]:
```
--> In python if you want to use json then we need to import one module that is json.
```

For Serlization

In [ ]:
```
for serilization we are having two Functions:
    dumps() --> it serilizes the python dictionary object to json string
    dump()  --> it serilizes the python dictionary object to json file.
```

dumps() Function

In [ ]:
```
dumps()--> it serilizes the python dictionary object to json string
```

Example

In [1]:
```
#Using Dumps Function:
import json
employee = {"name":"Pratyush Srivastava","age":21,"address":"New Delhi","Qualification":"B.Tech","None":None,"True":True}
print(type(employee))
json_string = json.dumps(employee)
print(json_string)
print(type(json_string))
```

```
<class 'dict'>
{"name": "Pratyush Srivastava", "age": 21, "address": "New Delhi", "Qualification": "B.Tech", "None": null, "True": true}
<class 'str'>
```

dump() Function

In [ ]:
```
dump()--> it serilizes the python dictionary object to json file.
```

Example

In [2]:
```
#with dump function
import json
employee = {"name":"Pratyush Srivastava","age":21,"address":"New Delhi","Qualification":"B.Tech","None":None,"True":True}
with open("json_employee.json","w") as f:
    json.dump(employee,f)
    print("Json Completed")
```

```
Json Completed
```

In [5]:
```
#Using Dump function
employee = {'bookstore': {'book': [{'@category': 'COOKING',
    'title': {'@lang': 'en', '#text': 'Everyday Italian'},
    'author': 'Giada De Laurentiis',
    'year': '2005',
    'price': '30.00'},
   {'@category': 'CHILDREN',
    'title': {'@lang': 'en', '#text': 'Harry Potter'},
    'author': 'J K. Rowling',
    'year': '2005',
    'price': '29.99'},
   {'@category': 'WEB',
    'title': {'@lang': 'en', '#text': 'Learning XML'},
    'author': 'Erik T. Ray',
    'year': '2003',
    'price': '39.95'}]}}
with open("sriya.json","w") as f:
    json.dump(employee,f,indent=4)
    print("Json File generated")
```

```
Json File generated
```

For Deserlization

In [ ]:
```
for Deserlization we are having Two Functions:
    1.loads --> converting the json object into python dict objec in form of string
    2.load --> converting the json object from a file into dict object
```

loads() Function

In [ ]:
```
loads() --> converting the json object into python dict objec in form of string
```

Example

In [3]:
```
#using loads function
import json
json_object = """{"name": "Pratyush Srivastava", "age": 21, "address": "New Delhi", "Qualification": "B.Tech", "None": null, "True": true}"""
json_string=json.loads(json_object)
print(json_string)
for k,v in json_string.items():
    print(k,v)
```

```
{'name': 'Pratyush Srivastava', 'age': 21, 'address': 'New Delhi', 'Qualification': 'B.Tech', 'None': None, 'True': True}
name Pratyush Srivastava
age 21
address New Delhi
Qualification B.Tech
None None
True True
```

load() Function

In [ ]:
```
load() --> converting the json object from a file into dict object
```

Example

In [4]:
```
#load function
import json
with open("json_employee.json","r") as f:
    x=json.load(f)
    print("file loaded")
    print(x)
```

```
file loaded
{'name': 'Pratyush Srivastava', 'age': 21, 'address': 'New Delhi', 'Qualification': 'B.Tech', 'None': None, 'True': True}
```

In [6]:
```
import json
with open("sriya.json","r") as f:
    x=json.load(f)
x
```

Out[6]:
```
{'bookstore': {'book': [{'@category': 'COOKING',
    'title': {'@lang': 'en', '#text': 'Everyday Italian'},
    'author': 'Giada De Laurentiis',
    'year': '2005',
    'price': '30.00'},
   {'@category': 'CHILDREN',
    'title': {'@lang': 'en', '#text': 'Harry Potter'},
    'author': 'J K. Rowling',
    'year': '2005',
    'price': '29.99'},
   {'@category': 'WEB',
    'title': {'@lang': 'en', '#text': 'Learning XML'},
    'author': 'Erik T. Ray',
    'year': '2003',
    'price': '39.95'}]}}
```

Important

In [ ]:
```
JSON FILE HANDLING --> dump --> write and append(Serlization) --> python dict to json dict
                       load --> read(Deserilization) --> json dict to python dict

JSON String -->    dumps --> strings
                   loads --> strings
```

Serlization and Deserlization Using Pickle

In [ ]:
```
Pickle --> Pickle in Python is primarily used in serializing and deserializing a Python object structure.
       --> In other words, it's the process of converting a Python object into a byte stream to store it in a file/database,
           maintain program state across sessions, or transport data over the network.
       --> In Python if we need to work for pickle then we need import one module that is pickle in python
       --> Pickle file is in binary format
```

In [ ]:
```
For serlization using pickle we are having one function:
    dump  --> serilization
for deserlization using pickle we are having one function:
    load  --> deserilization
```

Example of Serlization in Pickle using dump Function

In [7]:
```
import pickle
class Employee:
    def __init__(self,name,salary,address,mobile):
        self.name=name
        self.salary=salary
        self.address=address
        self.mobile=mobile
    def display(self):
        print("Employee name is "+self.name+" Employee Salary is "+self.salary+" Employee Address is "+self.address+" Employee Mobile Number is "+self.mobile)
e=Employee("Pratyush","50K","Delhi","9876543210")

with open("Ansh.pkl","wb") as f:
    pickle.dump(e,f)
    print("Pickling is done")
```

```
Pickling is done
```

Example of Deserlization in Pickle using load Function

In [8]:
```
with open("Ansh.pkl","rb") as f:
    x = pickle.load(f)
    print("unPickling is done")
    x.display()
```

```
unPickling is done
Employee name is Pratyush Employee Salary is 50K Employee Address is Delhi Employee Mobile Number is 9876543210
```

In [ ]:
```

```