

The unit test by leaptry.py file and python shell by leap.py file
And demonstration of thread safe and multi threading at the last

1. We have used python shell to demonstrate the similar test

We have to run the lead.py file

- a. Run import leap as lp
- b. Then initiate lp.datastorage() must have to run it will either create or load the data storage as per your need
- c. Then can perform the create,read,delete

```
C:\Windows\System32\cmd.exe - python
Python 3.8.3 (tags/v3.8.3:6f8c832, May 13 2020, 22:37:02) [MSC v.1924 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>> import leap as lp
>>> lp.datastorage()
enter the file path :: 1.yes 0.the default 0
loaded data file
{}
>>> lp.create("ch",50)

#### key value created ###

>>> lp.read("ch")
ch:50
>>> lp.delete("ch")
key ch is deleted!!
>>> lp.create("cb",88,60)

#### key value created ###

>>> lp.read("cb")
time to live for the cb has expired
>>> lp.delete("cb")
time to live for the cb has expired
>>> _
```

2. When we run the leaptry.py file then it asks to

- a. enter the file path 1. Yes 0. That is default in my case database.json file
- b. Then it asks whether to perform crd 1.yes 0.no
- c. If then then it ask which operation to perform 1.create, 2,read, 3,delete
- d. A snapshot of create and read operation

```
C:\Windows\System32\cmd.exe - python leaptry.py
enter the key : vc
enter the value for the key : 67
enter the timeout(numeric) : 60

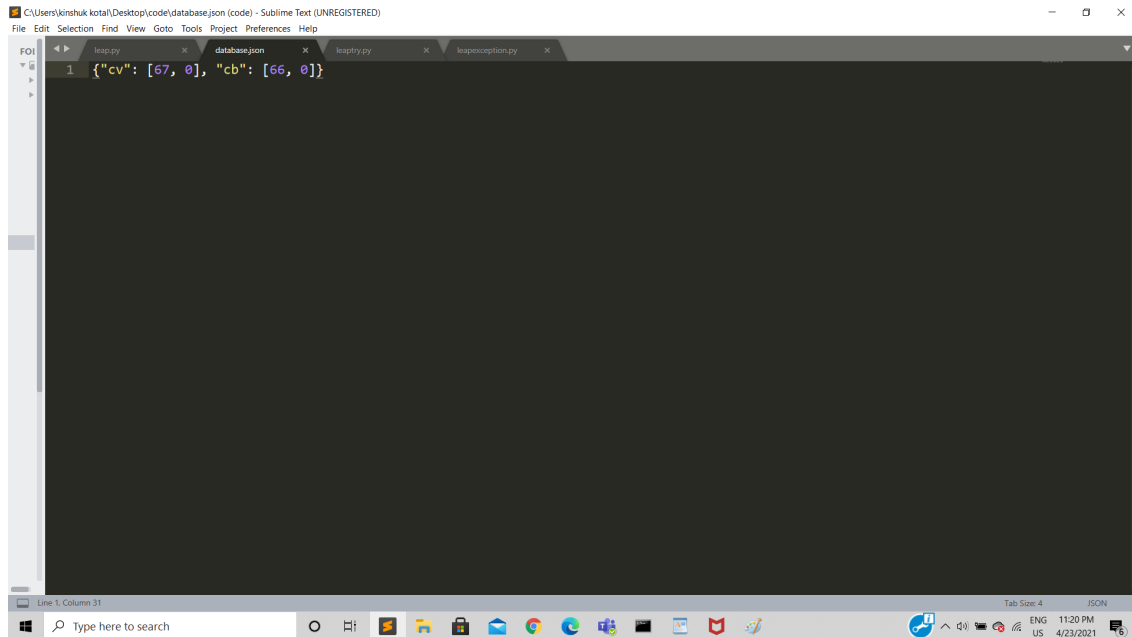
#### key value created ###

want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 1
enter the key : vb
enter the value for the key : 88
enter the timeout(numeric) : 120

#### key value created ###

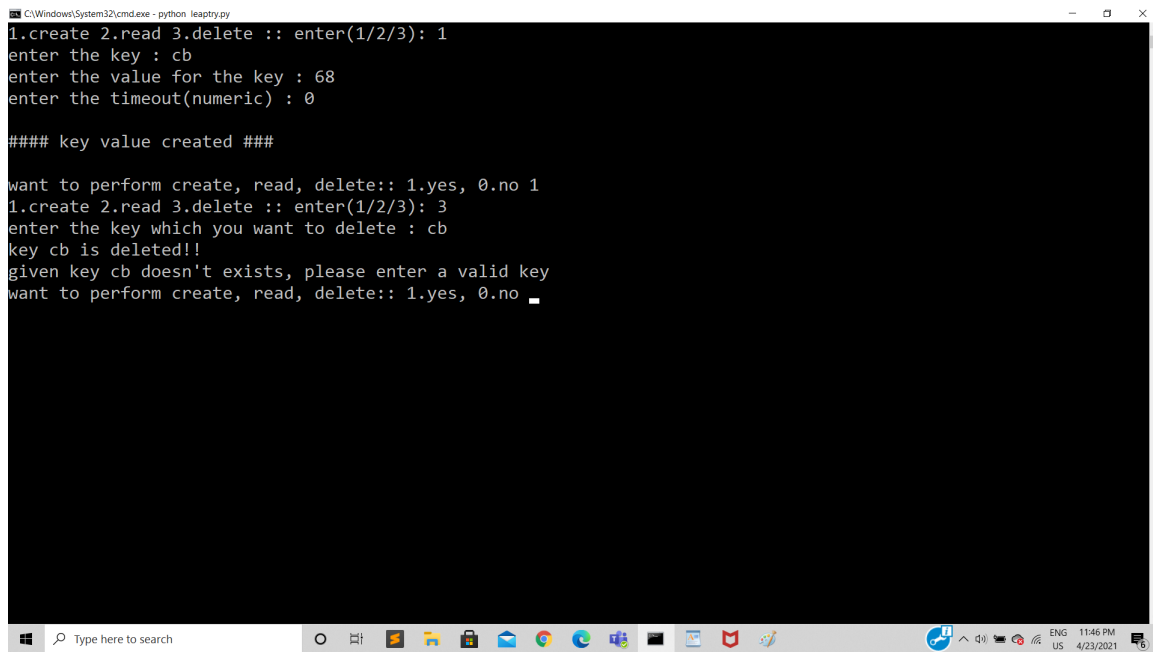
want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 2
enter the key which you want to read : vc
vc:67
want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 2
enter the key which you want to read : vc
vc:67
want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 2
enter the key which you want to read : vc
time to live for the vc has expired
want to perform create, read, delete:: 1.yes, 0.no
```

e. When we store first two key value pair, the snap of database.json file



The screenshot shows a Sublime Text editor window titled "C:\Users\kinshuk kotal\Desktop\code\database.json (code) - Sublime Text (UNREGISTERED)". The editor has several tabs open: "leap.py", "database.json", "leaptry.py", and "leapexception.py". The "database.json" tab is active, showing a single line of JSON code: `1 {"cv": [67, 0], "cb": [66, 0]}`. The status bar at the bottom indicates "Line 1, Column 31".

f. When we use delete operation



The screenshot shows a terminal window titled "C:\Windows\System32\cmd.exe - python leaptry.py". The terminal displays the following output:

```
1.create 2.read 3.delete :: enter(1/2/3): 1
enter the key : cb
enter the value for the key : 68
enter the timeout(numeric) : 0

#### key value created ####

want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 3
enter the key which you want to delete : cb
key cb is deleted!!
given key cb doesn't exists, please enter a valid key
want to perform create, read, delete:: 1.yes, 0.no
```

- g. Here we can have created a key whos limit exceeds 32 chars and it throws a message of memory limit exceeded

```
C:\Windows\System32\cmd.exe - python leaptry.py
want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 1
enter the key : qwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjkl
enter the value for the key : 88
enter the timeout(numeric) : 0
memory limit exceeded
want to perform create, read, delete:: 1.yes, 0.no
```

- h. We then demonstrate the time to live property by creating a key of cb, value=55, timeout=60 sec and after 60 sec invoked read operation for the key cb then it showed the message “ time to live for the cb has expired “

```
C:\Windows\System32\cmd.exe - python leaptry.py
enter the file path :: 1.yes 0.the default
loaded data file
{}
want to perform create, read, delete:: 1.yes, 0.no
1.create 2.read 3.delete :: enter(1/2/3): 1
enter the key : cb
enter the value for the key : 55
enter the timeout(numeric) : 60

#### key value created ###

want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 2
enter the key which you want to read : cb
time to live for the cb has expired
want to perform create, read, delete:: 1.yes, 0.no
```

- i. We then demonstrate is the key exists then also we try to invoke create operation

```
C:\Windows\System32\cmd.exe - python leap13.py
#### key value created ###

want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 1
enter the key : cb
enter the value for the key : 66
enter the timeout(numeric) : 0

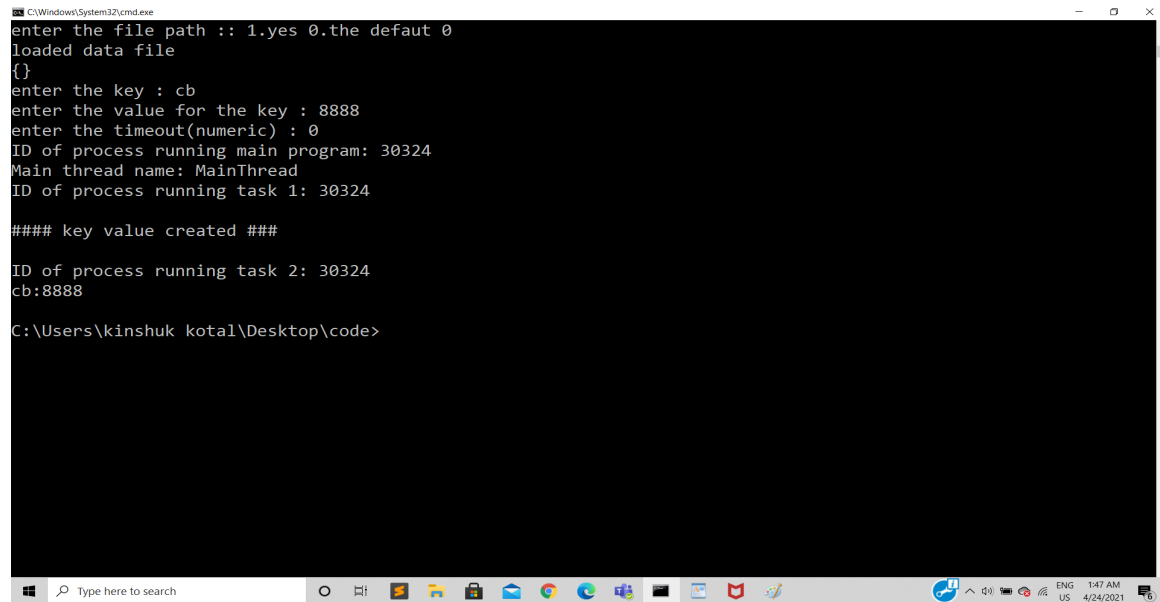
#### key value created ###

want to perform create, read, delete:: 1.yes, 0.no 1
1.create 2.read 3.delete :: enter(1/2/3): 1
enter the key : cb
enter the value for the key : 89
enter the timeout(numeric) : 0
key cb already exists, create another
want to perform create, read, delete:: 1.yes, 0.no
```

3. Multi threading and thread safe

- a. If we uncomment line number 64 and 99 of the leap.py file and run the leap.py file We can see the the id of the process running ie in the example create and read are running are same which is 30324

- b. We have run multiple thread concurrently



```
C:\Windows\System32\cmd.exe
enter the file path :: 1.yes 0.the default 0
loaded data file
{}
enter the key : cb
enter the value for the key : 8888
enter the timeout(numeric) : 0
ID of process running main program: 30324
Main thread name: MainThread
ID of process running task 1: 30324

#### key value created ####

ID of process running task 2: 30324
cb:8888

C:\Users\kinshuk kotal\Desktop\code>
```

The screenshot shows a Windows command prompt window titled "C:\Windows\System32\cmd.exe". The window contains the following text: "enter the file path :: 1.yes 0.the default 0", "loaded data file", "{}", "enter the key : cb", "enter the value for the key : 8888", "enter the timeout(numeric) : 0", "ID of process running main program: 30324", "Main thread name: MainThread", "ID of process running task 1: 30324", "#### key value created ####", "ID of process running task 2: 30324", "cb:8888", and "C:\Users\kinshuk kotal\Desktop\code>". The window is running on a Windows 10 desktop, with the taskbar visible at the bottom showing various application icons and the system clock indicating 1:47 AM on 4/24/2021.