Overview

The KeyValueStore API is a Python library designed to serve as an in-memory, multi-threaded key value store. The following operations are supported by the store:

- Get(key) – Returns the value associated with the key or raises a KeyError.
- Put(key, value) – Returns the value once the pair has been stored. The key will be stored until delete has been called.
- Put(key, value, duration) – Returns the value once the pair has been stored. The key will be stored for *duration* number of milliseconds or until delete is called.
- Delete(key) – Deletes the key from the store if it exists or raises a KeyError.

Requirements

This library requires users Python3 to run.

Usage

```python
self.store.put('foo', 'bar') # returns 'bar' once the pair has been written to the store
self.store.get('foo') # returns 'bar'
self.store.delete('foo') # does not return
self.store.get('foo') # raises a KeyError since 'foo' has been deleted

self.store.put('foo', 'bar', duration=5) # returns 'bar' once the pair has been written to the store
self.store.get('foo') # returns 'bar'
# 5 milliseconds later
self.store.get('foo') # raises a KeyError since the key 'foo' has expired
```

Performance

This library was designed to be highly performant for read operations by allowing multiple readers to perform GET operations on the store at the same time. This, however, is at the expense of the writers' performance. The library does not allow writers to add new entries to the store until all read requests have been fulfilled.

The table below describes the average amount of time and the amount of memory used to store a varying number of key-value pairs into the store.

Number of Keys	Operation Type	Average Operation Time (micros)	Memory Usage (bytes)
100000	Write	2.713226	22466045
500000	Write	2.720855647	85795717
1000000	Write	2.689814867	166268287
5000000	Write	3.165717206	772098381
10000000	Write	2.93393468	1539871592

The table below describes the average amount of time necessary to access a key in a store with a varying number of key-value pairs.

Number of Keys	Operation Type	Average Operation Time (micros)
100000	Read	4.922529841
500000	Read	5.634520947
1000000	Read	5.540252914
5000000	Read	5.834589481
10000000	Read	7.70696725