Intern Assignment (Summer 2021)

Building an auto-expiring dictionary

For this assignment, you will create an data structure that handles auto-expiring keys.

You can use any language like Python, Javascript, Typescript, etc. Ideally, write and build your code in a self-contained manner not tied to a particular IDE or tool. That being said, tools such as VSCode or even CLI commands are allowed, but you **must provide** a build script and README to help us run your code.

In your README, talk about your thought process when creating this application:

- What specific problems or difficulties did you encounter?
- Would you have done anything differently?
- Why did you pick this language?
- Would a different language have worked better?

> Note: This should take you around `1 to 2` hours.

Auto-expiring dictionary

Create a data structure that handles a dictionary of expiring keys. You do not need to implement a dictionary from scratch! Given a specific time to live, a key is no longer valid (inaccessible) once the duration has exceeded the time limit from the time of creation.

All data associated with invalidated keys should be *automatically* removed to reduce memory usage. In other words, The data structure should not wait to be accessed in order to invalidate keys.

Add some unit tests to make sure your auto-expiring dictionary can handle valid and invalid data. While you don't have to handle *every* scenario, it's a good idea to handle the basics.

> Bonus points if you figure out an efficient method or data structure to invalidate keys!

How to submit

Just zip up all relevant materials and email back to Quantlab!
