Assignment Overview

Deliverables

* Heaps.py
* HeapifyStocks.py

Problem 1:

Your job is to implement a standard Max Binary Heap Class. You have to implement the following public methods in your Heap. There are several private methods that also must be used to implement these features

1. \_\_init\_\_

This should store the internal array that is holding the heap, the count of the elements in the heap

1. \_\_str\_\_ & \_\_repr\_\_
2. percolateDown

private function, takes 0 arguments, void return

Accurately reheapifies array after an element has been removed from heap.

1. percolateUp

private function, takes 0 arguments, void return

Accurately maintains heap after element has been added

1. remove

public function, takes 0 arguments, return root element

1. add

public function, takes 1 argument “element”, void return

Problem 2:

You are an investment trader. You are responsible for keeping track of the movement in stock price of a single company’s equity (AAPL). After every time the price as changed, you must document and log the new median of the updated price and the past known prices.

The median, can be defined on <https://en.wikipedia.org/wiki/Median>

The naïve approach to this problem would be to always sort the list, and return the median, which in turn creates a runtime of nlogn. Your manager wants you to be much faster.

To solve this problem, you must utilize the advantage of using a data structure with a natural ordering like Heaps.