CSC148 Summer 2018: Exercise 3

Due: Thursday, May 31st @ 11PM

In this exercise, you are to implement a Stack using a dictionary in a class called DictionaryStack. The DictionaryStack you write should pass the client code provided.

To start, download ex3.py and ex3_pyta.txt and read through the code provided in the `if __name__ == '__main__'` block.

You **must** use a dictionary to store the contents of the Stack. If you use anything else, you will autofail the non-PythonTA criteria of the marking scheme.

The ___init___ for the DictionaryStack and part of the ___str___ has been provided. You are not to modify it in any way. The methods you need to write are:

- add(): This will take in an object of any type and add it to the DictionaryStack.
- remove(): This will remove the item at the top of the DictionaryStack and return it.
- is_empty(): This will return True if the DictionaryStack is 'empty' (has no items in it).
- ___str___(): This will return a string containing all of the string versions of each item. The formatting of this has been done for you; you just need to create a list containing all of the string versions of the items in the DictionaryStack.

Please document your code properly (type annotations, writing docstrings and docstring examples, etc.).

This exercise will require you to have PythonTA installed. If you haven't done so already, go through lab1 and the instructions on the Software page to install and set up PyCharm with PythonTA.

Submission

Exercises are to be submitted through MarkUs in the ex3 folder. Submit only ex3.py.

To log in to MarkUs, use your UTORid as the log-in name. The password is your teaching labs password. If you have not set this up or have forgotten your password, go to the Teaching Lab's Account Management Page and (re)set your password.

Grading Scheme

This exercise will be graded out of 4 marks, broken down as follows:

- 2 marks for being able to run the client code without issue (no assertion errors raised)

- 1 mark for passing PythonTA

- 1 mark for passing hidden test cases (which use your client code in other ways)

  - Details on what the hidden test cases will/won't test are describe below.

All of these marks are 'all-or-nothing' (i.e. you'll either get 0 on that criteria, or full marks).

You **must** use a dictionary to store the contents of the Stack. If you use anything else, you will autofail the non-PythonTA criteria of the marking scheme.

Hidden Test Cases

Things that the hidden test case might test:

- Adding any number of items to the DictionaryStack.
- Removing any number of items from a DictionaryStack.
- Calling is_empty on a DictionaryStack with any number of items.
- Printing a DictionaryStack that has had items removed from it.
- Adding duplicate items into the DictionaryStack.
  - Making sure that, when we pop from the DictionaryStack, only 1 instance of that item is removed from the DictionaryStack.
- Adding any type of item to the DictionaryStack that has a ___str___ method implemented.

Things that the hidden test case won't test:

- Removing from an empty DictionaryStack
- Adding a DictionaryStack to a Dictionarystack