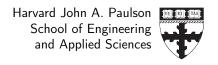
Systems Development for Computational Science

CS107/AC207 Fall 2022



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Pair-Programming 10

Python generators

Issued: November 4, 2022

Due: November 18, 2022 11:59pm

In this pair-programming session you will implement a Python generator that can be used as an iterator for an object.

You should work on the exercises in groups of 3 to 4 students via a tmate session. Your team members can submit the same file. Please indicate your names in a header in the files. See the tutorials on the class website for an example pair-programming workflow.¹ Do not forget to commit and push your work when you are done. Ensure that you are on your *default branch* for this and not, possibly, on your homework branch.

Exercise 1: Python Generators

```
Deliverables:

1. exercise_1.py
```

The following code models a text type that allows to iterate over words, where the re module of the standard library is used to find words in an input string.²

```
import re

class Text:
    """Text representation with word iteration support.

Example:
    -----
>>> text = Text("Hello CS107/AC207 class!")
>>> list(text)
['Hello', 'CS107', 'AC207', 'class']
```

¹https://harvard-iacs.github.io/2022-CS107/pages/tutorials.html#tutorial-pp

²https://docs.python.org/3/library/re.html

```
def __init__(self, text):
    self.text = text

def __iter__(self):
    return WordIterator(self.text)

class WordIterator:
    """Iterate of words in input text."""

def __init__(self, text):
    self.words = re.findall(r'\b[a-zA-Z0-9]+\b', text)

def __next__(self):
    try:
        return self.words.pop(0)
    except IndexError:
        raise StopIteration

def __iter__(self):
    return self
```

Please implement the WordIterator in the Text class directly using a Python generator function. You can find the skeleton code for this exercise in lab/pp10/data/exercise_1.py. Please see solution/exercise_1.py for the solution code.