

**Homework 7 is due Sunday, March 12 at 5 p.m.**

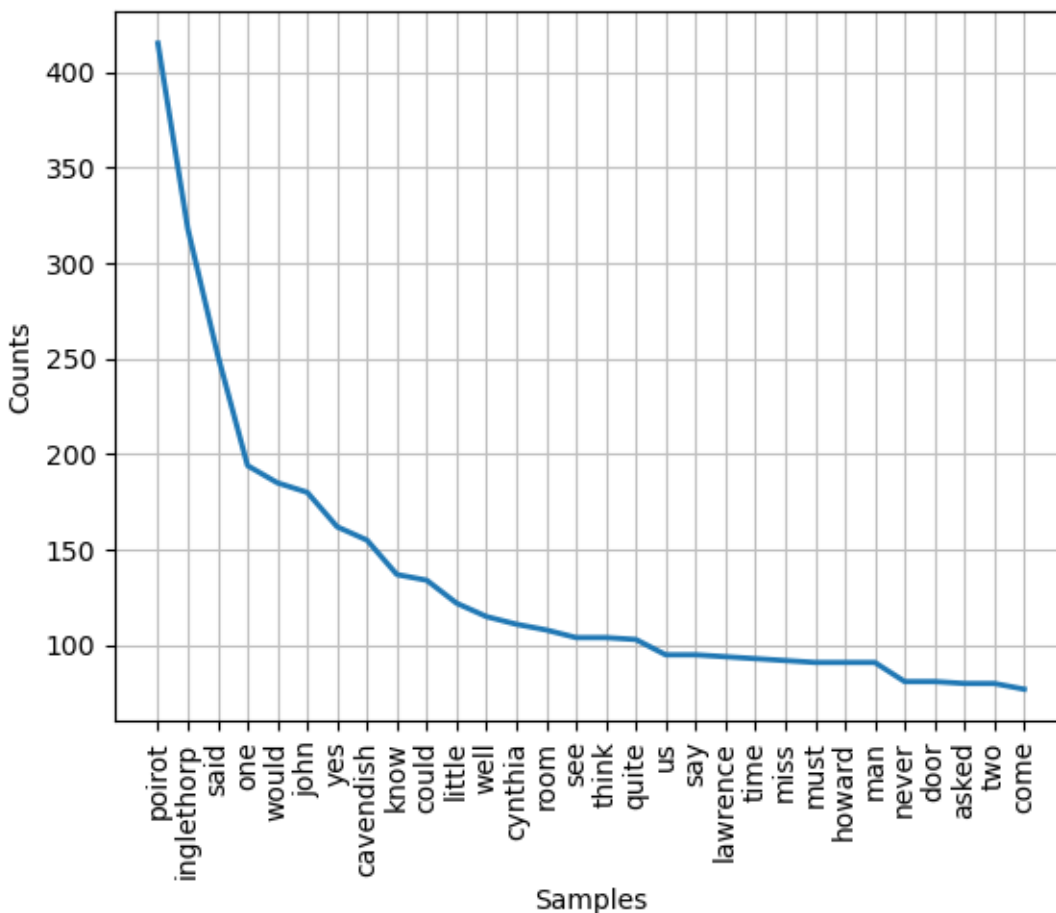
Please download `HW7.ipynb` and fill in the blanks.

Late submission will not be accepted.

**Problem 1** (45 pts):

Fill in the blank under Problem 1 in `HW6.ipynb`.

Visualize the word frequency of an online text. I have preprocessed the text for you. You need to remove the stop words, punctuation marks, and capital letters. In the end, you should show the following plot in the notebook.

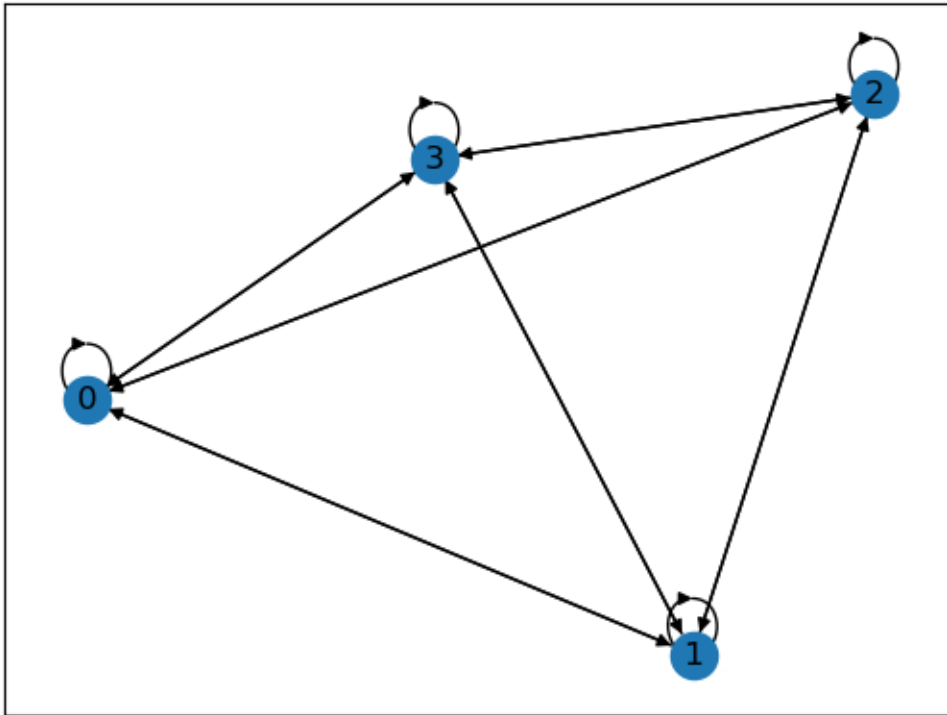


**Problem 2** (45 pts):

Fill in the blank under Problem 2 in `HW7.ipynb`.

In this problem, you need to implement a function `create_complete_graph`. This function takes one argument: an integer `n`, and returns a directed graph of `n` nodes (denote as  $G$ , you can use integers  $0$  to  $n - 1$  as the node labels), such that for any two nodes  $i$  and  $j$  in  $G$ , there is an edge pointing from  $i$  to  $j$ .  $i$  and  $j$  can be identical.

For example, `create_complete_graph(4)` should return a graph that looks like follows.

**Instructions:**

- Your code should not only work for the test cases I provided, but also for other cases.
- All code must be written originally by yourself. You are not allowed to (even partially) copy code from anyone else, including code provided by TAs or instructor. Incident of cheating or plagiarism will be reported to the Dean's office and results in a zero grade in this assignment.
- (5pt) Write programs to solve the above questions. Name your files as as instructed. You must name the files EXACTLY as instructed, otherwise 5 points will be deducted. Submit your files to Gradescope.
- (5pt) Add declaration in the beginning of each file to show the ownership. Please put your name, UID, and discussion section in a comment at the top of your source files (before the include statements). A sample description may look like:

```

'''
    PIC 16A Homework 1
    Author: John Doe
    UID: 111111111
    Discussion Section: 3A
    Date: 01/01/2023
'''

```

- (90pt) Code can be run with Python 3.9.15 and solves the question. To receive full credits, the output must look EXACTLY the same as instructed above, including words, spaces, symbols, etc. Your submissions will be graded with Python 3.9.15.

- Submit your files together to Gradescope. Do not submit the files separately! The best way might be “selecting all the files, drag and drop in the submission page”. You may submit multiple times, but only the last submission will be graded. Ask you TA or me if you have questions for submissions.