Homework Assignment 8

Due: June 3, 9:00 pm

For this homework, we will try to figure out some properties of the "ladders" graph based on `words.dat`. Based on the data file and programs in `hw8.zip`, write programs to answer the following questions and submit a report that includes your code, answers, and any of your comments.

1. On the "ladders" graph based on `words.dat`,
   (a) print out all the words adjacent to `hello`. What is the degree of `hello`?
   (b) print out all the words adjacent to `graph`. What is the degree of `graph`?
2. Compute the table of distribution of degrees. That is, make a table of the number of degree-0 vertices, the number of degree-1 vertices, ..., etc. For example, the table should look like

```
0: 671
1: 774
2: 727
3: 638
.
.
.
23: 2
24: 3
25: 2
.
.
.
```

3. What is the maximum degree?
4. What are the words that have the maximum degree?
5. What is the average degree?
6. How many nodes does our adjacency list have?
7. What is the minimum possible size required of `POOL_SIZE` in `backend.c`?
8. Include the source code for `hw8()` in your report, and submit as a pdf file.
9. Implement `search_index()` using a binary search, instead of sequential search, and include your implementation in the report.