10601a: Homework #1b - "Hello, Autolab"

TA-in-charge:
Henry Huang (liangkah@andrew.cmu.edu)

Assigned: 30 August 2017.
Due: 11:59:59pm on 5 September 2017.
Late Penalty: 20% per day.

Daniel Bird's Office Hours
@GHC 8110

Thr 08/31	09:00-11:00
Fri 09/01	10:00-11:00
Sat 09/02	09:00-10:00
Sun 09/03	09:00-10:00
Mon 09/04	12:30-13:30
Tue 09/05	18:00-19:00

Henry Huang's Office Hours
@Open Area near GHC7105

Thr 08/31	14:00-16:00
Fri 09/01	14:30-16:30
Mon 09/04	09:00-10:00
Tue 09/05	14:00-16:00

Policy on Collaboration among Students

The purpose of student collaboration is to facilitate learning, not to circumvent it. Studying the material in groups is strongly encouraged. It is also allowed to seek help from other students in understanding the material needed to solve a particular homework problem, provided no written notes are shared, or are taken at that time, and provided learning is facilitated, not circumvented. **The actual solution must be done by each student alone**.

The purpose of programming assignments in this course is to make sure you truly understand the relevant techniques. **All code must be written by each student alone**. We will strictly enforce this policy, by carefully inspecting your code using sophisticated detection techniques. You have been warned!

The presence or absence of any form of help or collaboration, whether given or

received, must be explicitly stated and disclosed in full by all involved. Specifically, **each assignment must contain a file named collaboration.txt where you will answer the following questions**:

- Did you receive any help whatsoever from anyone in solving this assignment? Yes / No. If you answered 'yes', give full details? (e.g."Jane explained to me what is asked in Question 3.4").

- Did you give any help whatsoever to anyone in solving this assignment? Yes / No. If you answered 'yes', give full details? (e.g. "I pointed Joe to section 2.3 to help him with Question 2").

- Did you find or come across code that implements any part of this assignment ? Yes / No. If you answered 'yes', give full details? (e.g. book & page, URL & location within the page, etc)

If you gave help after turning in your own assignment and/or after answering the questions above, you must update your answers before the assignment's deadline, if necessary by emailing the TA in charge of the assignment.

You are encouraged to read books and other instructional materials, both online and offline, to help you understand the concepts and algorithms taught in class. These materials may contain example code or pseudo code, which may help you better understand an algorithm or an implementation detail. However, when you implement your own solution to an assignment, you must put all materials aside, and write your code **completely on your own, starting "from scratch"**. Specifically, you may not use any code you found or came across. If you find or come across code that implements any part of your assignment, you must disclose this fact in your collaboration statement.

Some of the homework assignments used in this class may have been used in prior versions of this class, or in classes at other institutions, or elsewhere. Avoiding the use of heavily tested assignments will detract from the main purpose of these assignments, which is to reinforce the material and stimulate thinking. Because some of these assignments may have been used before, solutions to them may be, or may have been, available online, or from other people or sources. **It is explicitly forbidden to use any such sources, or to consult people who have solved these problems before. It is explicitly forbidden to search for these problems or their solutions on the internet.** You must solve the homework assignments completely on your own. For programming assignments, this means you must write your programs completely by yourself, and not use any code from any source whatsoever. I will be actively monitoring your compliance, and any violation will be dealt with harshly. Collaboration with other students who are currently taking the class is allowed, but only under the conditions stated above.

Collaboration without full disclosure will be handled severely, in compliance with CMU's Policy on Cheating and Plagiarism. All violations (even first one) of course policies will always be reported to the university authorities, will carry severe penalties, usually failure in the course, and can even lead to dismissal from the university. You have been warned!

General Instructions

This is part B of homework 1. You can find part A on canvas. This homework is neither representative of the standard difficulty of programming assignments for this course nor is designed to test your ability to program. **In this homework you have to choose C, C++,**

Python, or Java as your programming language. Submitting code for more than one language may result in undefined behavior. The autolab environment has **Python 2.6** installed—check your code runs on unix.andrew.cmu.edu.

0 Introduction

The goal of this assignment is to ensure that you:

1. Have a way to edit and test your code (i.e. a text editor and compiler/interpereter)

2. Are familiar with submitting to Autolab

3. Are familiar with file I/O and standard output in the language of your choice

Warning: This handout assumes that you are using a unix command prompt (with `zsh`, `bash`, `csh`, or similar). All of the command prompts lines listed in this handout will work on the unix.andrew.cmu.edu machines. You may need to use other commands or methods if you are working locally – especially if you are using Windows.

1 Reading from a file (20 Points)

In `hw1b.{c|cpp|py|java}`, implement a program that prints the lines of a file in reverse order to standard output. Specifically, your program should take the name of the input file as a command line argument and should output the lines of that file from last to first, seperated by "\n". You should assume that the input file has unix-style line breaks[1]

For example, if the file `input.txt` contained the stream

`#pineapples\n#pinstripes\n#pinwheelofdoom\n#pinsir\n`

which is commonly displayed as

```
#pineapples
#pinstripes
#pinwheelofdoom
#pinsir
```

depending on your language of choice, one of the following:

- `python hw1b.py input.txt`

- `gcc hw1b.c; ./a.out input.txt`

- `g++ hw1b.cpp; ./a.out input.txt`

- `javac hw1b.java; java hw1b input.txt`

---

[1]Windows uses "\r\n" to indicate a new line. Unix uses only "\n". See Wikipedia for details.

should output

```
#pinsir\n#pinwheelofdoom\n#pinstripes\n#pineapples\n
```

which is displayed as

```
#pinsir
#pinwheelofdoom
#pinstripes
#pineapples
```

You may assume that the contents of the input file will fit in memory for any reasonable machine and the contents of the file will be ASCII-encoded. You will be provided an example file `example.txt` with which you can test your code. However, do not assume that if your code works on that file then it will receive full points. We will grade your code on different, hidden test cases. Attempts to directly determine the specific contents of these tests constitute violation of the course policy.

2 Collaboration file

If you have not done so already, read the collaboration policy at the beginning of this homework. To receive credit for any of the autolab homeworks, you will need to submit a file named `collaboration.txt` as described in the collaboration policy. If you give help after you submit, you must either resubmit to autolab with the updated `collaboration.txt` file, make a private post on piazza describing the help, or email the assignment's instructor. Do not resubmit to autolab after the due date or if you have exhausted your submissions; instead, use email or piazza.

3 Autolab Submission (5 Points)

You must submit a .tar file named **hw1b.tar** containing `hw1b.{c|cpp|py|java}` and `collaboration.txt`. You can create that file by running `tar -cvf hw1b.tar hw1b.{c|cpp|py|java} collaboration.txt` from the directory containing your code and collaboration file.
DO NOT compress your files; you are just creating a tarball. Do not use tar `-czvf`.
DO NOT put the above files in a folder and then tar the folder.
Autolab is case sensitive, so observe that all your files should be named in **lowercase**. You must submit this file to the **"homework1b"** link on Autolab:
https://autolab.andrew.cmu.edu/courses/10601a-F17/assessments

Note: you may make arbtirarly many submissions to Autolab before the deadline, but only your last submission will be graded.