



Assignment 9

Python, the UNIX Command-line, and Version Control

Date Due: Wednesday, 11 August 2021, 11:59pm

Total Marks: 25

General Instructions

- **This assignment is individual work.** You may discuss questions and problems with anyone, but the work you hand in for this assignment must be your own work.
- **Assignments are being checked for plagiarism.** We are using state-of-the-art software to compare every pair of student submissions.
- Each question indicates what to hand in. You must give your document the name we prescribe for each question, usually in the form aNqM, meaning Assignment N, Question M.
- Make sure your name and student number appear at the top of every document you hand in. These conventions assist the markers in their work. Failure to follow these conventions will result in needless effort by the markers, and a deduction of grades for you.
- Do not submit folders, or zip files, even if you think it will help. It might help you, but it adds an extra step for the markers.
- Programs must be written in Python 3.
- **Assignments must be submitted to Moodle.** There is a link on the course webpage that shows you how to do this.
- **Moodle will not let you submit work after the assignment deadline.** It is advisable to hand in each answer that you are happy with as you go. You can always revise and resubmit as many times as you like before the deadline; only your most recent submission will be graded.
- Read the purpose of each question. Read the Evaluation section of each question.

Version History

- **12/08/2020:** released to students

Overview

This assignment is a little different from past assignments. In this one, you'll be watching more video, and doing a few applications, but not so much coding as previous assignments.

This material is every bit as important as programming. Take the time to watch the videos, following along, and trying to do the same things on your computer as the video proceeds. There's a lot to watch, and none of it is very hard.

Hint: Watch all Mike's videos at 1.5x speed. You can slow down the video when you want to listen carefully. Even Mike watches Mike at 1.5x.

The questions for this assignment are simply you providing evidence that you have watched the videos, and you have given all this material a try.

The material is presented to you as follows:

- Python and the UNIX Command line
 1. Slides: Moodle, Week 13, Lab3_commandline.pdf
 2. Video: Panopto, Week 13, Python on the Command-Line
 3. Video for Windows users: Week 13, Step-by-Step Windows 10.
- Version control
 1. Slides: Moodle, Week 13, Lab04_VCS.pdf
 2. Video: Panopto, Week 13, VCS
- Note: If you prefer shorter videos, Arlen Schaeffel has created a few. These can be found in Panopto, Tutorial Material. You do not need to watch both, but you certainly may.

Don't worry that you haven't seen Lab01 and Lab02.

Mac and Linux users

You don't have to do anything special. Everything you need is built into your operating system.

Windows users

You will have to download Git-for-Windows. There is a video for that:

- Video for Windows users: Week 13, Step-by-Step Windows 10.

Do this right away. If you wait until the last minute, you will be very stressed.

Question 1 (5 points):

Purpose: Students will practice the following skills:

- Basic UNIX commands.

Degree of Difficulty: **Easy.** Start early, so you have time.

References: You may wish to review the following:

- Slides: Moodle, Week 13, Lab3_commandline.pdf
- Video: Panopto, Week 13, Python on the Command-Line
- Video for Windows users: Week 13, Step-by-Step Windows 10.

Restrictions: This question is homework assigned to students and will be graded. This question shall not be distributed to any person except by the instructors of CMPT 145. Solutions will be made available to students registered in CMPT 145 after the due date. There is no educational or pedagogical reason for tutors or experts outside the CMPT 145 instructional team to provide solutions to this question to a student registered in the course. Students who solicit such solutions are committing an act of Academic Misconduct, according to the University of Saskatchewan Policy on Academic Misconduct.

Task

On Slides 43-55 of the Lab03 notes, there are UNIX commands and simple activities that you should do.

What to Hand In

A file called `thisquestion-transcript.txt` containing the copy/paste from the work you did for Slides 43-55.

Evaluation

- 5 marks: Your copy/paste demonstrates that you carried out the activity.
 - You need to show interaction with the command-line.
 - It's okay if you typed a few things wrong, and had to correct it by trying again.

Question 2 (5 points):

Purpose: Students will practice the following skills:

- Making a Python script into a command-line tool.

Degree of Difficulty: **Easy.** Start early, so you have time.

References: You may wish to review the following:

- Slides: Moodle, Week 13, Lab3_commandline.pdf
- Video: Panopto, Week 13, Python on the Command-Line

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Task

On Slide 58 of the Lab03 notes, do Activity 1.

What to Hand In

A file called `a9q2-transcript.txt` containing the copy/paste from the activity. Please make sure that this part of your file is clearly marked as "Activity 1". This is so the markers can find it easily.

Evaluation

- 5 marks: Your copy/paste demonstrates that you carried out the activity.
 - You need to show interaction with the command-line and at least 3 different uses of the script taking different values from the command-line.

Question 3 (5 points):

Purpose: Students will practice the following skills:

- Making a Python script into a command-line tool.

Degree of Difficulty: **Easy.** Start early, so you have time.

References: You may wish to review the following:

- Slides: Moodle, Week 13, Lab3_commandline.pdf
- Video: Panopto, Week 13, Python on the Command-Line

Restrictions: This question is homework assigned to students and will be graded. This question shall not be distributed to any person except by the instructors of CMPT 145. Solutions will be made available to students registered in CMPT 145 after the due date. There is no educational or pedagogical reason for tutors or experts outside the CMPT 145 instructional team to provide solutions to this question to a student registered in the course. Students who solicit such solutions are committing an act of Academic Misconduct, according to the University of Saskatchewan Policy on Academic Misconduct.

Task

On Slide 59 of the Lab03 notes, do Activity 2. This calls for a minor revision to the factorial script. Run the script a couple of times, using command-line arguments, and at least one time with no arguments, showing your helpful message.

What to Hand In

A file called `a9q3-transcript.txt` containing the copy/paste from the activity. Please make sure that this part of your file is clearly marked as "Activity 2". This is so the markers can find it easily.

Evaluation

- 5 marks: Your copy/paste demonstrates that you carried out the activity.
 - You need to show interaction with the command-line and at least 3 different uses of the script taking different values from the command-line.
 - You demonstrated that the new version of your script will display a helpful message if the script is called without the right number of command-line arguments.

Question 4 (5 points):

Purpose: Students will practice the following skills:

- Making a Python script into a command-line tool.

Degree of Difficulty: **Easy.** Start early, so you have time.

References: You may wish to review the following:

- Slides: Moodle, Week 13, Lab3_commandline.pdf
- Video: Panopto, Week 13, Python on the Command-Line

Restrictions: This question is homework assigned to students and will be graded. This question shall not be distributed to any person except by the instructors of CMPT 145. Solutions will be made available to students registered in CMPT 145 after the due date. There is no educational or pedagogical reason for tutors or experts outside the CMPT 145 instructional team to provide solutions to this question to a student registered in the course. Students who solicit such solutions are committing an act of Academic Misconduct, according to the University of Saskatchewan Policy on Academic Misconduct.

Task

On Slide 60-62 of the Lab03 notes, do Activity 3. This calls for a minor revision to a script from Chapter 3.

What to Hand In

A file called `a9q4-transcript.txt` containing the copy/paste from the activity.

Evaluation

- 5 marks: Your copy/paste demonstrates that you carried out the activity.
 - Your copy/paste shows the script running on the command-line before you changed it.
 - Your copy/paste shows that you revised the script to take 2 command-line arguments, and you have called the script a number of times.
 - You demonstrated that you can find a value for n so that the output is around 40%-60% dead ends. You don't need to be really precise. Just show that you can run the script a bunch of times, without having to edit the script to change n and *trials* every time.

Question 5 (5 points):

Purpose: Students will practice the following skills:

- Using Git version control for a simple project.

Degree of Difficulty: **Easy**. Start early, so you have time.

References: You may wish to review the following:

- Slides: Moodle, Week 13, Lab04_VCS.pdf
- Video: Panopto, Week 13, VCS
- Note: If you prefer shorter videos, Arlen Schaeffel has created a few. In order:
 - Panopto, Tutorial Material: Version Control Overview
 - Panopto, Tutorial Material: Version Control Basics
 - Panopto, Tutorial Material: Version Control – Command Line
 - Panopto, Tutorial Material: Version Control – GUI
 - Panopto, Tutorial Material: Version Control – Branching and Merging

The total time is about the same, and the content is more or less the same, but you might prefer his presentation. Watching at 1.5x is recommended.

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Task

On Slide 24-45 of the Lab04 notes, do Activity 3. This is basically a chance for you to repeat the steps shown on video, in a step by step manner. Take time to pause and work things out.

What to Hand In

On Slide 45, you are instructed to submit a log-file. In PyCharm, or on the command-line, type the command `git --no-pager log`. This will output text to the console window, and it may scroll past the limits of your window. Copy and paste the information displayed into a text file called `a9q5-log.txt`.

Evaluation

- 5 marks: Your copy/paste demonstrates that you carried out the activity.
 - Your log shows multiple commits; three commits is the minimum.
 - Your log shows good commit messages.