PS0: Getting Started

Collaboration: You should work on the problems yourself, before discussing with others, including your cohorts at your cohort meeting. In addition to discussing with your cohortmates, you may discuss the problems with any other current CS3102 students you want, and use any resources you want except for any materials from previous offerings of this course or complete solutions that might be available on the web, which are not permitted. Sharing and subsequently submitting any text, code, images, figures, etc. constitutes plagiarism, so make sure all submitted materials are created exclusively by members of your cohort.

Problem 1: Introductions

Everyone in your cohort should introduce themselves, provide your pronouns, teach all the other cohort members how to pronounce your name correctly, and share something interesting about yourself with the group. This can be anything you want, but a few suggestions:

1. What did you do over the winter break?

2. What is the most interesting thing about your hometown?

3. Who is your spirit animal?

4. If you could change anything about UVA, what would you change?

In your answer to this problem, list each cohort-mate, a pronunciation guide for their name (e.g. NAY-thin brew-NELL), their pronouns, and the interesting fact. If you're not working in a cohort this semester, do the same but just for yourself.

Problem 2: LaTeXpractice 1. including an image

Learn how to include drawings in your documents with the "`\includegraphics {image}`" command by submitting a caricature of Professor Brunelle. (Any image will do, but the best caricatures will receive special recognition...and fun!) Make sure your image fits on a single page. If it's too large then use something like "`\includegraphics [scale=0.75]{image}`" (which will scale down your image by 25%, i.e. it will be 75% of its original size) to shrink it.

In addition to posting here, I encourage you to share your image on the #ps0 channel on discord. Nate will select the best caricature there, and the person who created it will be deemed this week's Star Baker (make sure to name the creator if it wasn't you!).

Problem 3: LaTeXpractice 2. Inline math

The main reason for using LaTeXthis semester is to present math more neatly and clearly. There are two main ways to include math in your documents. The first is inline math, which you use when you want to include math among regular English text. This is done by putting your math between \$ symbols. For example, the statement "if $x \in \mathbb{N}$ then $S \neq \emptyset$" is produced using inline text. For each line below, add on the mathematical symbol/expression we've described using inline text. The first two are done for you.

– The symbol for set membership: $\in$

– The fraction one half: $\frac{1}{2}$

– The expression square root of 2:

– The fraction 1 divided by the square root of 2:

– The mathematical symbol pi:

– The expression "S is a subset of the real numbers":

– The expression "the empty set is a proper subset of the rational numbers":

– The Kleene star of the set $\{0, 1\}$.

Problem 4: LaTeXpractice 3. Align environment

When doing sequences of equations or multi-line derivations, the align environment should be used. Look at the incomplete derivation below. Everything between the "begin" and "end" statements are part of the align environment. In this environment, all text is considered to be in math mode. Each time you see the double backslash there is a new line made. Across lines the & symbols are vertically aligned. To understand why there is a star on the word "align", try removing it and see what happens.

For this problem, complete the derivation below to solve for x. Make sure you keep the equal signs aligned! After that, add one more line containing the first ten digits of pi (3.141592653) and align the decimal point with the equals signs.

$$4x^2 + 12x = -9$$
$$4x^2 + 12x + 9 = 0$$
$$(2x + 3)^2 = 0$$

Problem 5: Getting Python set up

All programming assignments this semester will be completed in Python3. We're using Python because there are times when we're going to actually use our own super simplified programming language that we'll define in class. Because of Python's flexible syntax, this simplified programming language can be seen as just a restricted version of Python, allowing us to just run and check our programs as Python code.

Because we're using only a small portion of the Python language, any version of Python3 and any IDE will be fine for our purposes. This means that if you already have Python3 set up on your machine (perhaps from CS 1110 or similar), then you should be good to go. If you don't, then follow the directions here to get Python3 and PyCharm installed: installing python 3.

If you're in a cohort, make sure everyone is able to complete this!

Simply write your name(s) below to confirm that you have Python3 working on your machine.