

## CSC165H1: Problem Set 0

Due Wednesday September 18 before 4 pm

### General instructions

Please read the following instructions carefully before starting the problem set. They contain important information about general problem set expectations, problem set submission instructions, and reminders of course policies.

- Your problem sets are graded on both correctness and clarity of communication. Solutions which are technically correct but poorly written will not receive full marks. Please read over your solutions carefully before submitting them. Proofs should have headers and bodies in the form described in the course note.
- Each problem set may be completed in groups of up to three. If you are working in a group for this problem set, please consult [https://github.com/MarkUsProject/Markus/wiki/Student\\_Groups](https://github.com/MarkUsProject/Markus/wiki/Student_Groups) for a brief explanation of how to create a group on MarkUs.

**Exception:** Problem Sets 0 and 1 must be completed individually.

- Solutions must be typeset electronically, and submitted as a PDF with the correct filename. **Handwritten submissions will receive a grade of ZERO.**

The required filename for this problem set is **problem\_set0.pdf**.

- Problem sets must be submitted online through MarkUs. If you haven't used MarkUs before, give yourself plenty of time to figure it out, and ask for help if you need it! If you are working with a partner, you must form a group on MarkUs, and make one submission per group. "I didn't know how to use MarkUs" is not a valid excuse for submitting late work.
- Your submitted file should not be larger than 9MB. This may happen if you are using a word processing software like Microsoft Word; if it does, you should look into PDF compression tools to make your PDF smaller, although please make sure that your PDF is still legible before submitting!
- The work you submit for credit must be your own; you may not refer to or copy from the work of other groups, or external sources like websites or textbooks. You may, however, refer to any text from the Course Notes (or posted lecture notes), except when explicitly asked not to.

### Additional instructions

Reminder: Problem Set 0 must be done **individually**. In this problem set, you will **type** a document containing both text and mathematics. You are welcome to use your favourite word processor, provided it can produce suitable symbols and align equations. You will need to dig through the instructions, or else look at another tool, for example:

**Google docs equation editor:** See Google Docs equations

**L<sup>A</sup>T<sub>E</sub>X:** See L<sup>A</sup>T<sub>E</sub>Xtutorial

1. Create a title for your document that shows the course code (CSC165H1), the phrase “Problem Set 0”, and the due date.
2. Create an ordered list (i.e. numbered items), showing the courses you are taking this term from least to most difficult (in your opinion). Please give the course number, title, and the name of your instructor for each course.
3. Let  $S_1$  be the set of all even positive integers, and  $S_2$  be the set of all integers less than 15. List all of the elements in the  $S_1 \setminus S_2$  using set notation (i.e.,  $\{\dots\}$ ).
4. Write down the truth table for the propositional formula  $(p \wedge q) \Rightarrow s$ . There should be *eight* rows in your table (plus a header row).
5. Show the steps involved in isolating  $x$  in the following equation (assume  $n$  is positive). Do *not* just show the final result: we’re looking for at least two or three steps here, to demonstrate that you can align the equal signs.

$$3^{x-2} = n^x$$

Remember that *isolating* a variable means rewriting an equation so that the variable appears on one side by itself, and no occurrences of that variable appear on the other.

**Hint:** divide both sides by  $n^x$  or  $3^x$ . You might want to review logarithms if you get stuck here.