

## University of Toronto Faculty of Arts and Science

## CSC165H1S Midterm 1, Version 2

Date: February 6, 2019 Duration: 75 minutes Instructor(s): David Liu, François Pitt

### No Aids Allowed

Name:																		
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- This examination has 3 questions. There are a total of 6 pages, DOUBLE-SIDED.
- All statements in predicate logic must have negations applied directly to propositional variables or predicates.
- In your proofs, you may always use definitions we have covered in this course. However, you may not use any external facts about these definitions unless they are given in the question.
- For algorithm analysis questions, you can jump immediately from an exact step count to an asymptotic bound without proof (e.g., write "the number of steps is  $3n + \lceil \log n \rceil$ , which is  $\Theta(n)$ ").

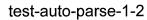
Take a deep breath.

This is your chance to show us how much you've learned.
We WANT to give you the credit that you've earned.

A number does not define you.

Good luck!

Question	Grade	Out of
Q1		5
Q2		5
Q3		5
Total		15





 ${\rm CSC165H1S}$  , Winter 2019

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Use this page for rough work. If you want work on this page to be marked, please indicate this clearly at the location of the original question.



 ${\rm CSC165H1S}$  , Winter 2019

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1. [5 marks] Question 1.

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2. [5 marks] Question 2.



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3. [5 marks] Question 3.

## test-auto-parse-1-6

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Use this page for rough work. If you want work on this page to be marked, please indicate this clearly at the location of the original question.