

Due: Monday, March 1, 2021

Written by Daniel Geschwender

Name 1 (Print) \_\_\_\_\_

CSE Login \_\_\_\_\_

Name 2 (Print) \_\_\_\_\_

CSE Login \_\_\_\_\_

Problem	Page	Points	Score
A	-	3	
B	-	3	
C	-	4	
Typesetting (bonus)		1	
Total		10	

**Instructions** Follow instructions *carefully*, failure to do so may result in points being deducted.

- This homework is one of the ‘honors’ component of this course. It should not take more than two (2) hours to complete. If it does, please let us know.
- The homework must be submitted on paper. Homework *neatly* formatted in  $\LaTeX$  will receive a 10 percent bonus. When formatting in  $\LaTeX$ , submit both the .tex and .pdf files via handin, in addition to the hard copy. You will not receive the bonus points if you work with a partner (see below).
- Clearly label each problem and submit answers *in order*.
- Staple this cover page to the front of your assignment for easier grading.
- Late submissions will *not* be accepted.
- When you are asked to prove something, you must give a formal, rigorous, and complete a proof as possible. Each step in your proof must contain explanation that would allow us to understand what theorem/logic you have applied to arrive at that step.
- You are to work individually and all work should be your own. Check partner policy below.
- The CSE academic dishonesty policy is in effect (see [http://cse.unl.edu/ugrad/resources/academic\\_integrity.php](http://cse.unl.edu/ugrad/resources/academic_integrity.php)).

**Partner Policy** You may work in pairs as long as follow the guidelines below:

1. You must work *all* problems *together*. You may not simply partition the work between you.
2. You must use  $\LaTeX$  and you may divide the typing duties however you wish.
3. You may not discuss the problems with other groups or individuals.
4. Hand in only one hard copy with both authors’ names.

**Homework set-up:**

- Install MiniSAT on your CSE account.
- Follow the instructions provided in the recitation slides.
- SATLIB benchmarks can be found at  
`http://www.cs.ubc.ca/~hoos/SATLIB/benchm.html`.
- Results from running MiniSAT on a problem instance are output to a file specified by the user:  
`./minisat [options] <input-file> <result-output-file>`
- *Alert:* Some instances may have extra lines that cannot be parsed by MiniSAT. Delete any line starting with '%' and all following lines.

**Problem A:**

- Select a *satisfiable* benchmark instance from the SATLIB website.
- Run the instance through MiniSAT.
- Submit the generated output as well as the contents of the results file.

**Problem B:**

- Select an *unsatisfiable* benchmark instance from the SATLIB website.
- Run the instance through MiniSAT.
- Submit the generated output as well as the contents of the results file.

**Problem C:**

- Select a benchmark from the SATLIB website.
- Read its description page.
- Briefly describe, in your own words, what the benchmark is modeling.