

## Assignment 1

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<b>Due Date:</b> Programming Code due <b>Thursday October 12 at 11:59:59 PM.</b> Paper Portion due <b>Friday October 13 at 4:00 PM.</b>
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This assignment is out of 150 marks and is worth **15%** of your final grade.

### Handing in this Assignment

#### On paper

**What:** Solutions to question 1, 2 and 3 and a printout of experimental results of question 4.

**Due on: Friday October 13 on or before 4pm (but aim for noon in class).**

**Where:** In class (to Sheila) or to the administrative assistant, Sonia at W.H. Pratt Building Room 283.

#### Electronically

**What:** Your program for question 4. The program, and your submission, must follow the rules described in the Programming Directions, available at the CSC486/2502 website.

**Due on: Thursday October 12 before 11:59:59 PM**

### **Silent Policy**

A silent policy will take effect 24 hours before this assignment is due. This means that no question will be answered, by email or in person.

### **Late Policy**

- Late assignments will be handled based on a system of “grace days”, as follows: Each student begins the term with 3 grace days. An assignment handed in from one minute to 24 hours late uses up one grace day. 24:01 to 48 hours late uses up two grace days, etc.
- Once you have exhausted your grace days, the penalty is 20% of the assignment total grade for each day.

### **Clarification Page**

Important corrections (hopefully few or none) and clarifications to the assignment will be posted on the Assignment 1 Clarification page, linked from the CSC486/2502 home page.

## Assignment 1 [150 marks total]

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Please note that Question 4 is a programming question.

### Question 1. FOL [15 marks total]

Chapter 2, Exercise 4.

*Mark Distribution: First-order formulation of : 5 marks. Proof: 10 marks.*

### Question 2. KR&R in FOL [35 marks total]

Chapter 3, Exercise 4.

*Mark Distribution: (a) 2 marks each bullet, (b) 15 marks, (c) 10 marks*

### Question 3. Propositional SAT using Tableau [30 marks total]

Chapter 4, Exercise 7, parts (a), (b), (c) and (d).

*Mark Distribution: (a) and (b) 2 marks each. (c) 15 marks (d) 7 marks*

### Question 4. Implementing and Testing Tableau [70 marks total]

Chapter 4, Exercise 7, part (e).

See the CSC486/2502 course web site for programming directions and code base.

The reference [5] that is mentioned can be found on the Web at:

<http://www.cs.sfu.ca/~mitchell/papers/ai92-hsat.ps>

Be sure to look at Chapter 4, Exercise 6, which is referred to.

*Mark Distribution:*

- i) random formulae generator (15 marks)*
- ii) decision procedure using tableau (takes set of clauses returns Y/N) (30 marks)*
- iii) experiments (15 marks). No more than 500 runs of your program are needed!*
- iv) documentation (5 marks). You should explain what functions/predicates do, what arguments are, how to run code (nothing too elaborate)*
- v) style (5 marks)*

*Don't forget that your program **must** follow the rules described in the Programming Directions document on the CSS486/2502 website!*

**Have Fun!**