CSE 321: Discrete Structures
Assignment #1
April 2, 2003
due: Wednesday, April 9

1. Section 1.1, exercise 16, parts a, b, e, f, g.

2. State in English the converse and contrapositive of each of the following implications:

    (a) If a is pushed onto the stack before b, then b is popped before a.

    (b) If the input is correct and the program terminates, then the output is correct. (Be sure to use De Morgan's Law to simplify the contrapositive.)

3. Section 1.1, exercise 40.

4. Section 1.2, exercise 8d.

5. Section 1.2, exercise 12.

6. Section 1.2, exercise 14.

7. Section 1.2, exercise 26. (Hint: Do exercise 25 as a warmup, and check your solution at the back of the textbook.) For full credit on exercise 26, it is not sufficient to give an example of the construction. You should describe the construction in its generality. To get you started, suppose the propositional variables are $p_1, p_2, \ldots, p_n$ and the compound proposition is f. Consider a line of the truth table of the form

$$
\begin{array}{cccc|c}
p_1 & p_2 & \cdots & p_n & f \\
\hline
v_1 & v_2 & \cdots & v_n & T
\end{array}
$$

where $v_1, v_2, \ldots, v_n$ are each either T or F. Corresponding to this line of the truth table, specify what conjunction of variables or their negations you will add to your formula. What about for each line of the truth table of the form

$$
\begin{array}{cccc|c}
p_1 & p_2 & \cdots & p_n & f \\
\hline
v_1 & v_2 & \cdots & v_n & F
\end{array} \quad ?
$$