CSci 1302 Assignment 8
Due Friday, April 15th in class

Problem 1 (4 points). Fibonacci numbers are defined as $F_0 = 0, F_1 = 1$, and for all $k \geq 2$ $F_k = F_{k-1} + F_{k-2}$. Use strong induction to prove the following property of Fibonacci numbers: $F_{n+m-2} = F_n F_{m-1} + F_{n-1} F_{m-2}$. Here $n \geq 2, m \geq 2$. Please point out the part of the proof where you had to use strong induction.

Hint: you should do induction on n only and assume that m is fixed. The other way around (induction on m with n fixed) should work as well, but you cannot do induction on both.

Problem 2 (9 points). Exercises 5, 7 p. 253, exercise 11 p. 254. Exercise 11 may have a typo, depending on the edition. There should be a line

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y := y - 1
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after

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then do product := product + x.
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In an incorrect edition the line may be missing entirely or may use y_{new} and y_{old} instead of y. In the latter case just ignore the subscripts and replace = with :=.