

Name: _____

Quiz 2

Foundations of Computer Science
Fall 2007

1. The Ackermann function, $A(m, n)$ is defined:

$$\begin{aligned} A(0, n) &= n + 1 && \text{for } n \geq 0 \\ A(m, 0) &= A(m - 1, 1) && \text{for } m > 0 \\ A(m, n) &= A(m - 1, A(m, n - 1)) && \text{for } n \geq 0 \end{aligned} \tag{1}$$

Write a Scheme function that evaluates $A(m, n)$.

2. Draw a box and arrow diagram that represents the value of the following expression:

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(list 1 (cons 2 (list (cons 3 4) 5)))
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One more on the back!

3. Draw a state diagram for a deterministic finite automaton that recognizes the regular language $\{a, aba\}$.