CIS 341, **Day Class**, Fall 2004 Quiz #3 Prof. M. K. Nakayama

Print Family (i.e., last) Name: _____

Print Given (i.e., first) Name: _____

Instructions:

- Write all answers in the space provided.
- If you need to do scratch work, use the backs of the sheets.
- During this quiz it is prohibited to:
  1. exchange information with any other person in any way, including by talking or exchanging papers or books;
  2. use any electronic aid, including calculators;
  3. use any books or notes;
  4. leave the classroom before you complete and turn in your quiz.

I have read and understand all of the instructions above. On my honor, I pledge that I have not violated the provisions of the NJIT Academic Honor Code.

_____

Signature and Date

Recall that a context-free grammar $G = (\Sigma, \Omega, R, S)$ is a **regular grammar** if each production $A \to U$ has $U \in \Sigma^*\Omega + \Sigma^*$.

1. Let L be the language generated by the following regular grammar G:

$$\begin{aligned} S &\to abS \mid X \mid \Lambda \\ X &\to aX \mid abb \mid bY \\ Y &\to abbX \mid b \end{aligned}$$

   Give a transition graph that accepts L.

2. Prove or disprove the following statement:
   If L is a language generated by a context-free grammar that is **not** a regular grammar, then L is a nonregular language.
   If the statement is true, give a proof. If the statement is false, give a counterexample. Explain your answer.