1 Review of Relations
List the ordered pairs in the relation $R$ from $A = \{0, 1, 2, 3, 4\}$ to $B = \{0, 1, 2, 3\}$ where $(a, b) \in R$ iff:

a) $a = b$

b) $a \mid b$

c) gcd$(a, b) = 1$

2 Relational Properties
For each of these relations on the set $\{1, 2, 3, 4\}$, decide whether it is reflexive, whether it is symmetric, whether it is antisymmetric, and whether it is transitive.

a) $\{(2, 2), (2, 3), (2, 4), (3, 2), (3, 3), (3, 4)\}$

b) $\{(1, 1), (2, 2), (3, 3), (4, 4)\}$

c) $\{(1, 2), (2, 3), (3, 4)\}$

3 Finite State Machines
Draw the state diagrams for the finite-state machines with these state tables:

a) $\begin{array}{c|c|c|c}
\text{Input} & 0 & 1 \\
0 & s_0 & s_1 \\
1 & s_1 & s_0 \\
s_0 & s_1 & s_1 \\
s_1 & s_0 & s_2 \\
s_2 & s_1 & s_1
\end{array}$

b) $\begin{array}{c|c|c|c}
\text{Input} & 0 & 1 \\
0 & s_0 & s_1 \\
1 & s_2 & s_1 \\
s_0 & s_0 & s_1 \\
s_1 & s_2 & s_1 \\
s_2 & s_2 & s_2
\end{array}$

What language does this generate if $F = \{s_1\}$?