1. (10 points) Give a finite automaton recognizing this language:

\[ \{ x \in \{0, 1\} \mid x \text{ contains } 01 \} \]

**Solution:**

\[ s_1 \quad 0 \quad s_2 \quad 1 \quad s_3 \]

\[ 1 \quad 0 \quad 0,1 \]
2. (10 points) What language does this automaton recognize?

Solution: See Figure 1.6 in Sipser’s Chapter 1.1