13.3 Finite-State Machines with No Output

13.3 pg. 975 # 1
Let $A = \{0, 11\}$ and $B = \{00, 01\}$. Find each of these sets.

a) $AB$

b) $BA$

c) $A^2$

13.3 pg. 975 # 5
Describe the elements of the set $A^*$ for these values of $A$.

a) $\{10\}$

b) $\{111\}$

c) $\{0, 01\}$

13.3 pg. 975 # 9
Determine whether the string 11101 is in each of these sets.

a) $\{0, 1\}^*$

b) $\{1\}^*\{0\}^*\{1\}^*$

c) $\{11\}\{0\}^*\{01\}$

d) $\{11\}^*\{01\}^*$

e) $\{111\}^*\{0\}^*\{1\}$

f) $\{11, 0\}\{00, 101\}$

13.3 pg. 876 # 17
Find the language recognized by the given deterministic finite-state automaton.

![Diagram of the deterministic finite-state automaton]
13.3 pg. 876 # 19

Find the language recognized by the given deterministic finite-state automaton.

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\[
\text{start} \rightarrow s_0 \xrightarrow{1} s_1 \xrightarrow{0} s_2 \xrightarrow{0,1}
\]
```

13.3 pg. 876 # 23

Construct a deterministic finite-state automaton that recognizes the set of all bit strings beginning with 01.

13.3 pg. 876 # 27

Construct a deterministic finite-state automaton that recognizes the set of all bit strings that contain exactly three 0s.

13.3 pg. 877 # 45

Find the language recognized by the given nondeterministic finite-state automaton.

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\[
\text{start} \rightarrow s_0 \xrightarrow{0} s_1 \xrightarrow{1} s_2
\]
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