Finite State Machines

Transducers

Chapter 5

Deterministic Finite State Transducers

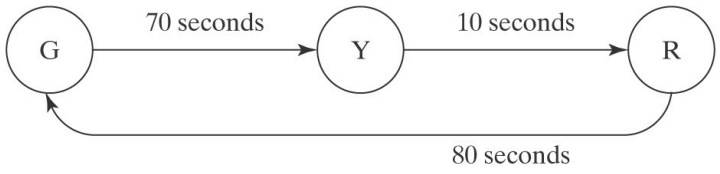
A ***Moore machine*** $M = (K, \Sigma, O, \delta, D, s, A)$, where:

- K is a finite set of states
- Σ is an input alphabet
- O is an output alphabet
- $s \in K$ is the initial state
- $A \subseteq K$ is the set of accepting states,
- δ is the transition function from $K \times \Sigma$ to K,
- D is the output function from K to O^*.

M outputs each time it lands in a state.

A Moore machine *M* computes a function *f*(*w*) iff, when it reads the input string *w*, its output sequence is *f*(*w*).

A Simple US Traffic Light Controller



Deterministic Finite State Transducers

A ***Mealy machine*** $M = (K, \Sigma, O, \delta, s, A)$, where:

- K is a finite set of states
- Σ is an input alphabet
- O is an output alphabet
- $s \in K$ is the initial state
- $A \subseteq K$ is the set of accepting states
- δ is the transition function from $K \times \Sigma$ to $K \times O^*$

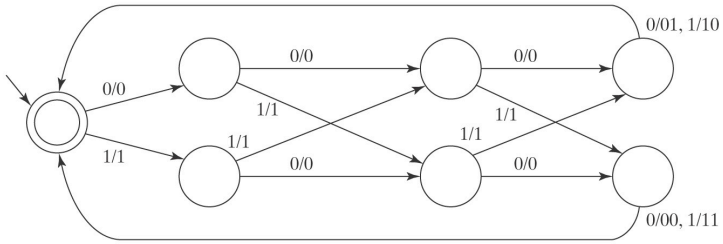
M outputs each time it takes a transition.

A Mealy machine *M* computes a function *f*(*w*) iff, when it reads the input string *w*, its output sequence is *f*(*w*).

An Odd Parity Generator

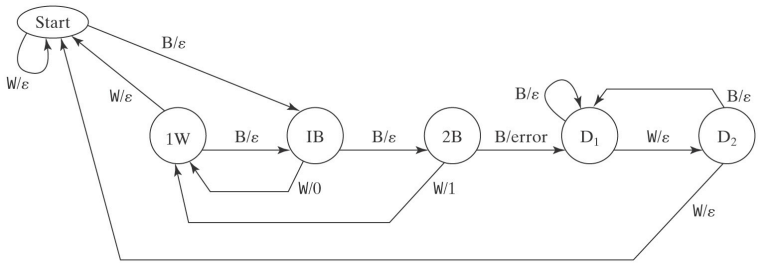
After every four bits, output a fifth bit such that each group of four bits has odd parity.

0 0 1 0 1 1 0 0 0 0 0 0 1 1 1 1



A Bar Code Scanner

A Bar Code Scanner



English Morphology