

CSC236 Worksheet 8 Solution

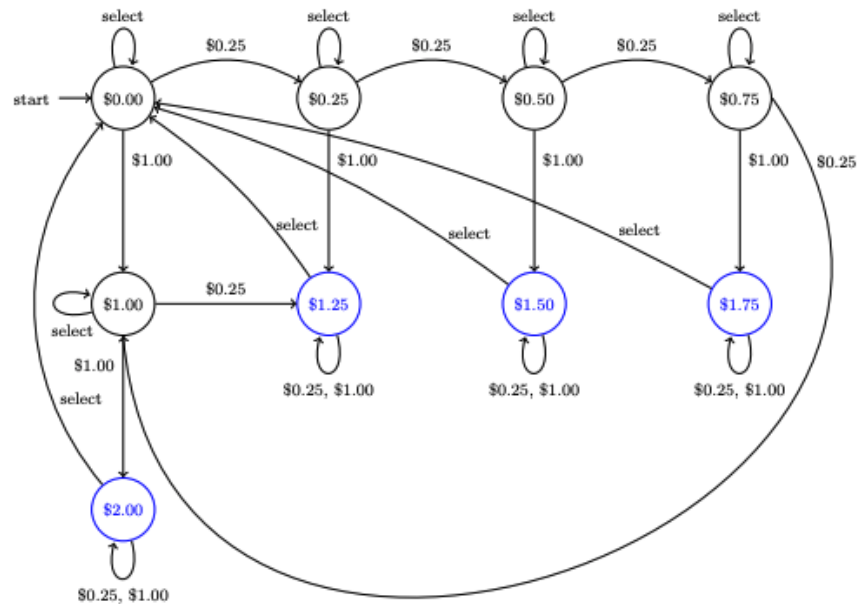
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Question 1

Notes:

- **Deterministic Finite State Automaton (DFSA):** is a mathematical method of machine which, given any input string x , **accepts** or **rejects** x .
- Applications of DFSA
 1. Vending Machine



2. Protocol analysis
3. Text parsing
4. Video game character behavior

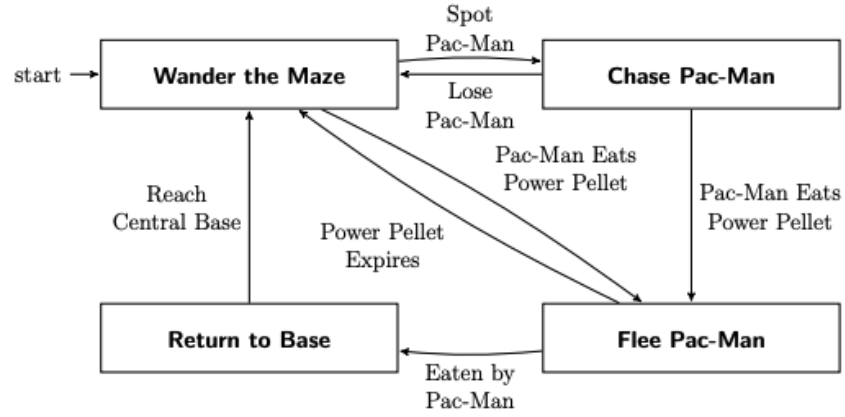


Figure 3: Behavior of a Pac-Man Ghost

5. Security Analysis
6. CPU control units (**)
7. Natural Language Processing (**)
8. Speech Recognition (**)

- Definitions and Syntax

- *DFSA* M is a quintuple $M = (Q, \Sigma, q_0, F, \delta)$, where
 - * Q : a finite set of **states**.
 - * Σ : a finite non-empty alphabet
 - * $q_0 \in Q$: the start or initial state
 - * $F \subseteq Q$: the set of accepting states