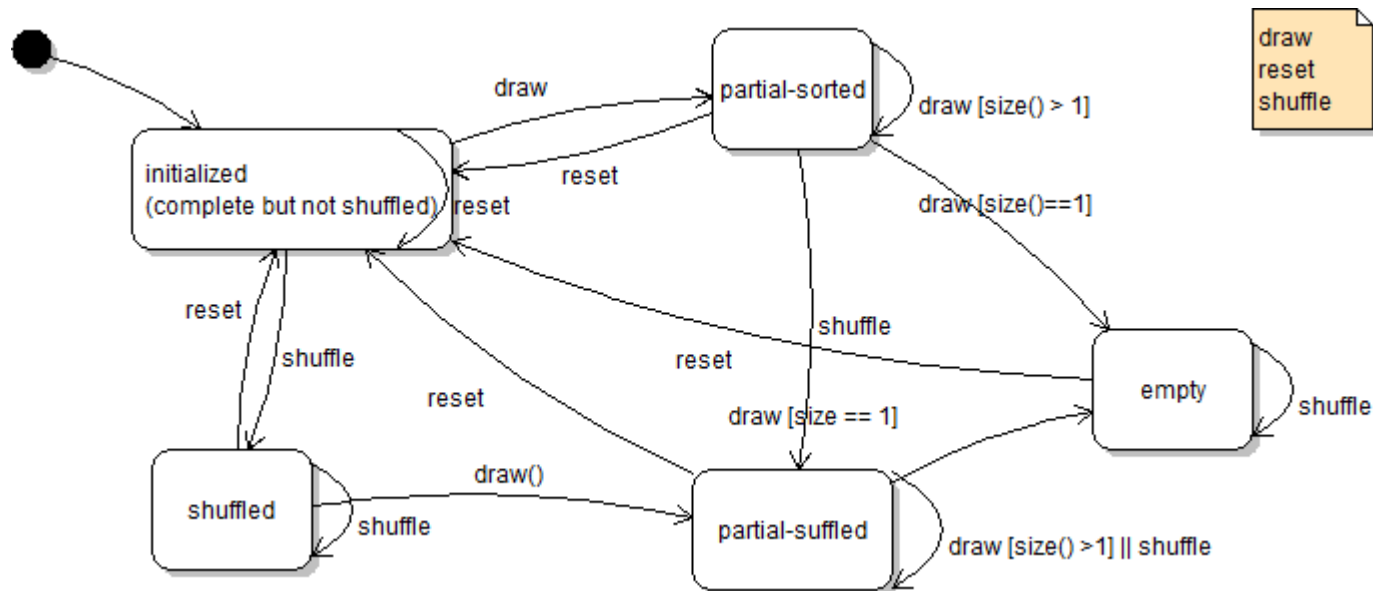# Reasoning About Object State

Important Concepts

- Abstract vs. Concrete State

- Object Protocols

- UML State Diagrams

- Finite-State Automata

State Diagram for Deck (Weak Design)

Dryer

The dryers in my apartment building work as follows (with a few simplifications).

The dryer is normally off. To get it to operate you have to put in 2.00$. Once the money is inserted, you cannot add additional credit until the drying is over. The mechanism to insert the money only allows you to put the exact amount in one go. To start the machine once the money is inserted, you have to close the door and press the start button. The dryer will then operate for exactly 60 minutes, and then stop by itself. If you open the door while it's in operation, the dryer will stop and whatever time was left is lost.

Draw a UML state diagram modeling the dryer.

Reminder

State 1 →(Trigger [condition]/effect)→ State 2

Dryer Solution
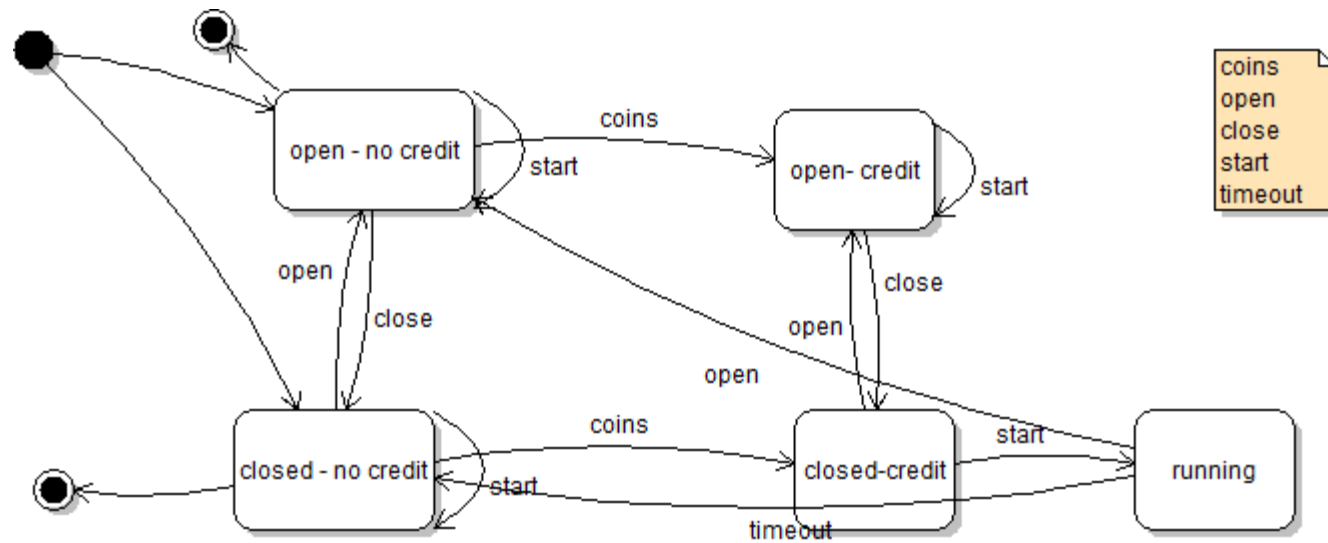
Vending Machine

- The machine sells a selection of different beers.
- All beers have a price, not necessarily the same.
- If a user selects a beer, the price is displayed. If the user adds enough coins within 60s, the beer is provided and change is returned.
- If a user adds coins without selecting a beer, the available balance is shown. If a user selects a beer that is worth less than the balance, the beer is provided and changed is returned. If not, an error message shows "insufficient balance".
- A reset button resets any selection and returns the balance.

Reminder

```
State 1  ──Trigger [condition]/effect──▶  State 2
```