Altering Behavior with the State Pattern

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Motivation

Shopping cart

Supermarket, eStore

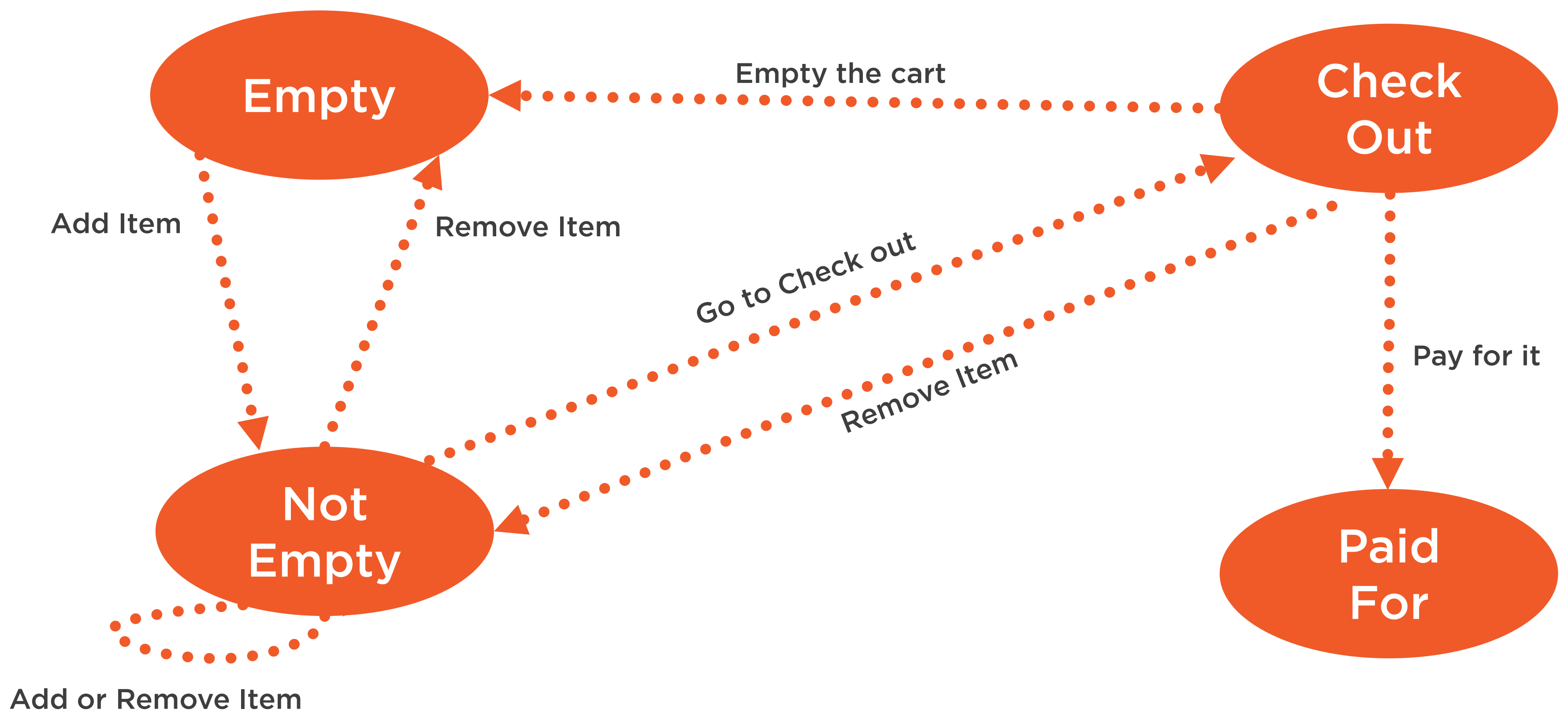
Various states

- Empty
- Containing some items
- At the checkout
- Paid for

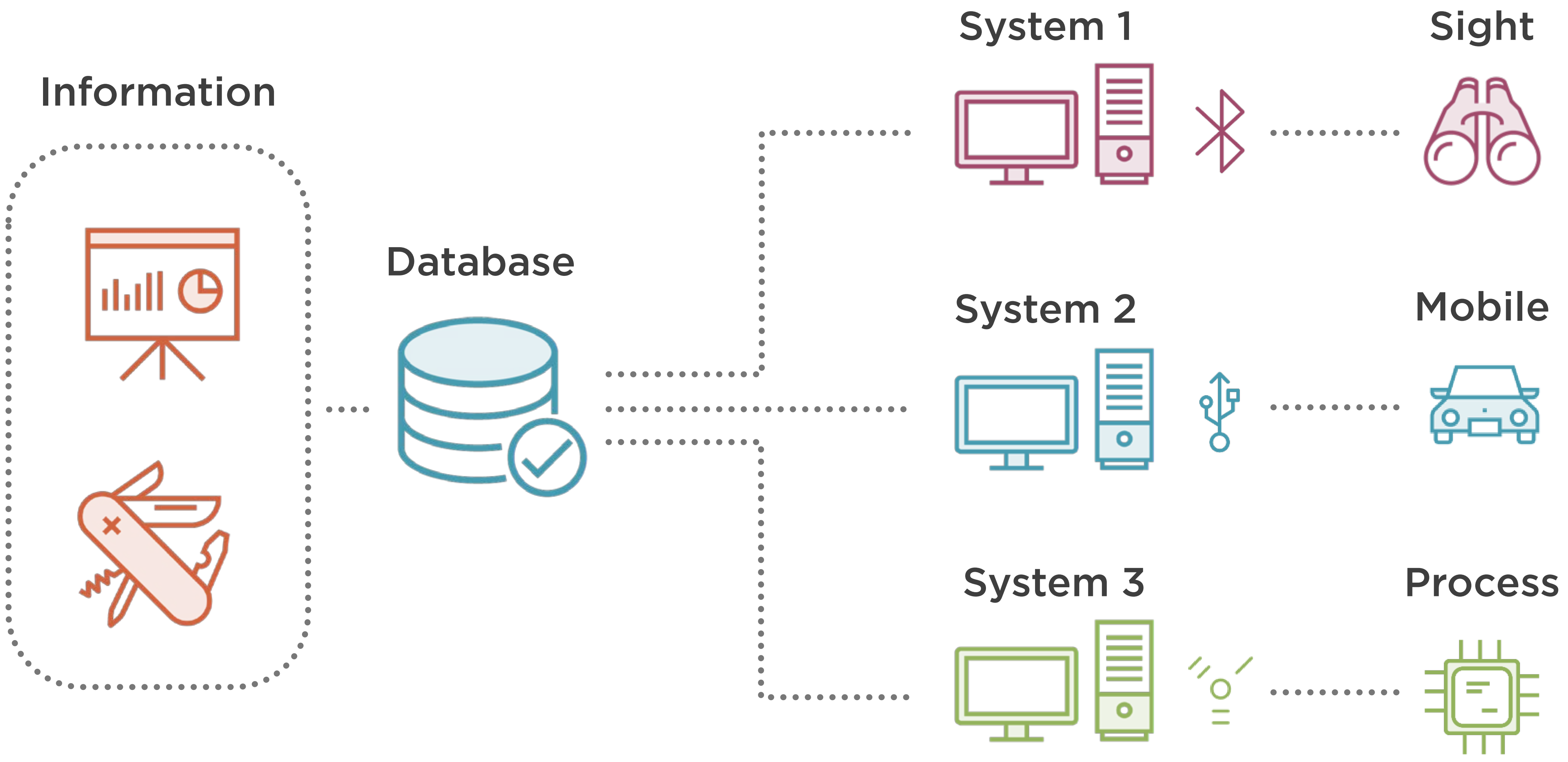
Transitions:

- Adding and removing items
- Checking out
- Paying for your purchases

Shopping Cart State Diagram



Title Only Layout Example



Demo

Model the shopping cart

Use one variable to track the state

Create methods for state transitions

Run the model

See if we like the result!

State

Classification: Behavioral

Operates in a particular context

Uses a class for each state

Requests delegate to the state objects

Clients interface with the context

State Pattern Structure

Demo

Implement the State Pattern

Create a shopping cart context

Create state classes

Add transition handles

Make sure it still works!

Consequences

Encapsulates state-specific behavior

Distributes behavior across state classes

Makes state transitions explicit

State objects can be shared

Flexible transition definitions

Can create states at transition time

Summary

When is the State Pattern applicable?

When object's behavior depends on state

Remove long if/elif/else statements

Similar in some ways to Strategy