Dynamic Modeling

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Building complex systems

- Model first
- Then build and deploy

Modeling

- Modeling with different perspectives
  - Static vs. dynamic; system to variables; requirements to deployment; …
- No single view may be sufficient

- A Set of models for a complex system
- Nearly independent views
- But views must be consistent with each other

Modeling language

- Models need to be represented

- Modeling languages
  - Supports different models
  - Notations for models
  - Semantics need to be defined
  - Generation of code from models
  - Traceability into implementation
- UML is a modeling language

Dynamic modeling

- Capturing changes
  - States
  - Invocations
  - Flow of events

Aspects to be considered

dependency

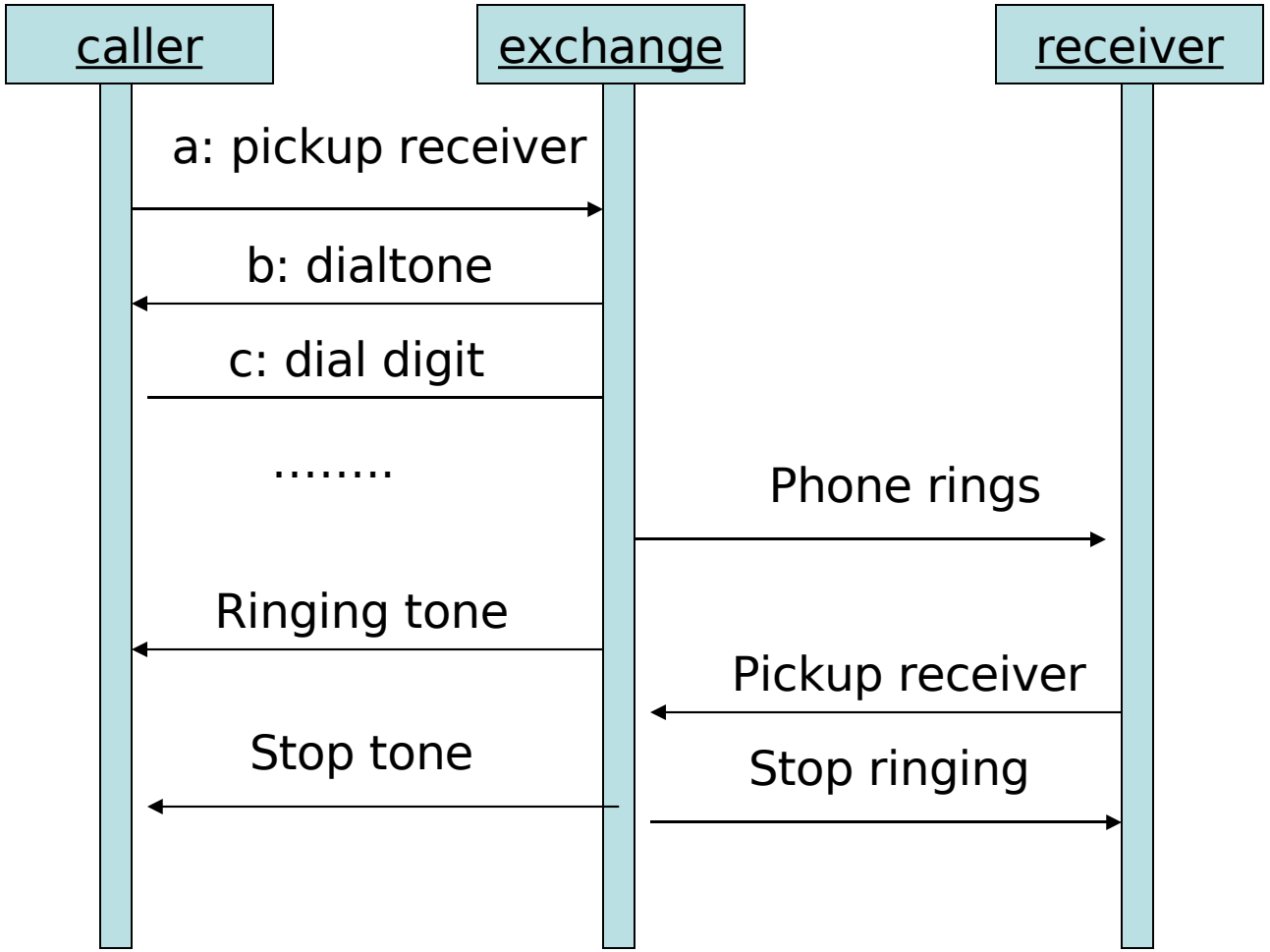
concurrency

participation

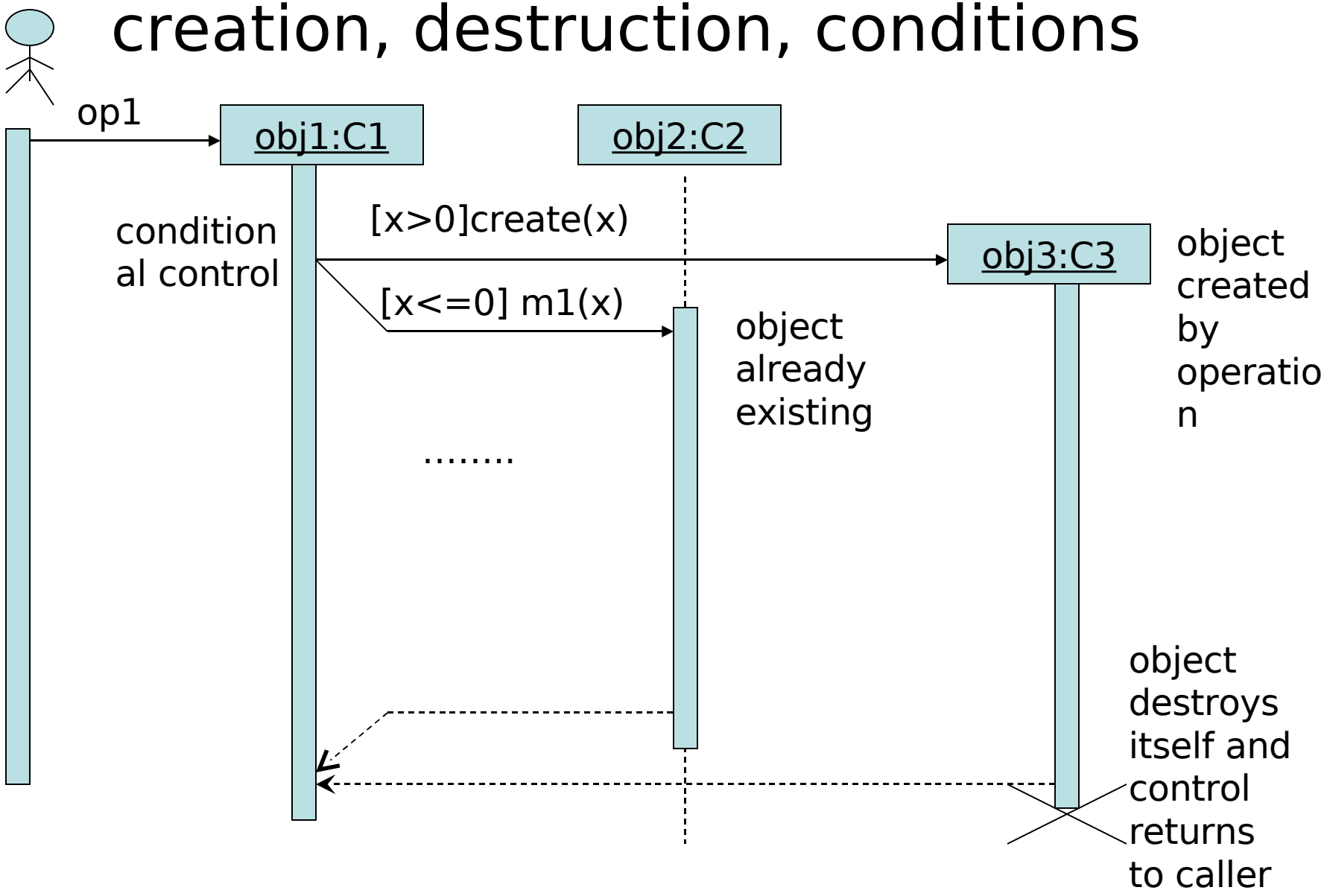
UML support for modeling

- Use case diagram
- Class diagram
- Statechart diagrams
- Activity diagram
- Sequence diagram
- Collaboration diagram
- Component diagram
- Deployment diagram

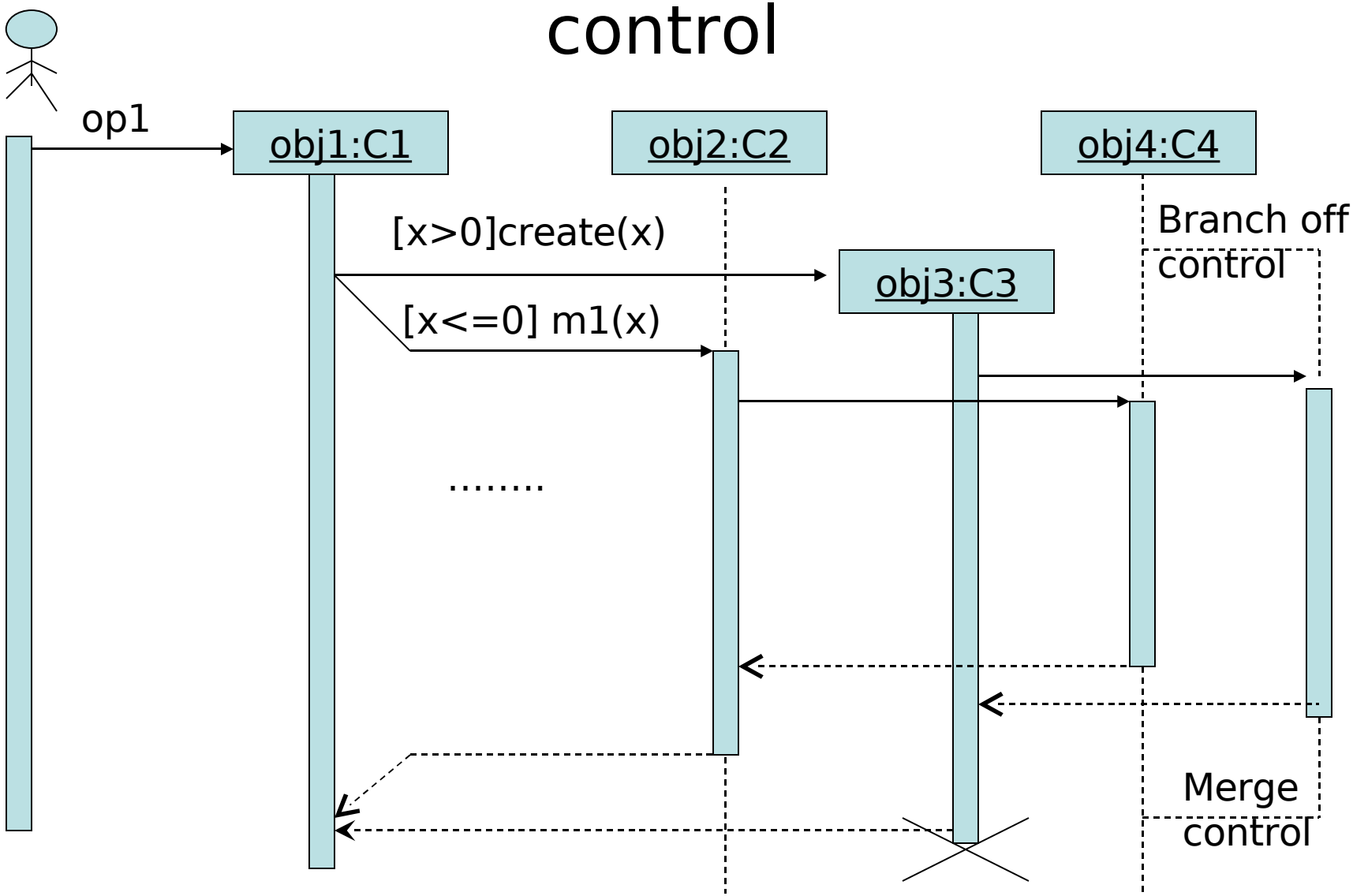
A Sequence diagram



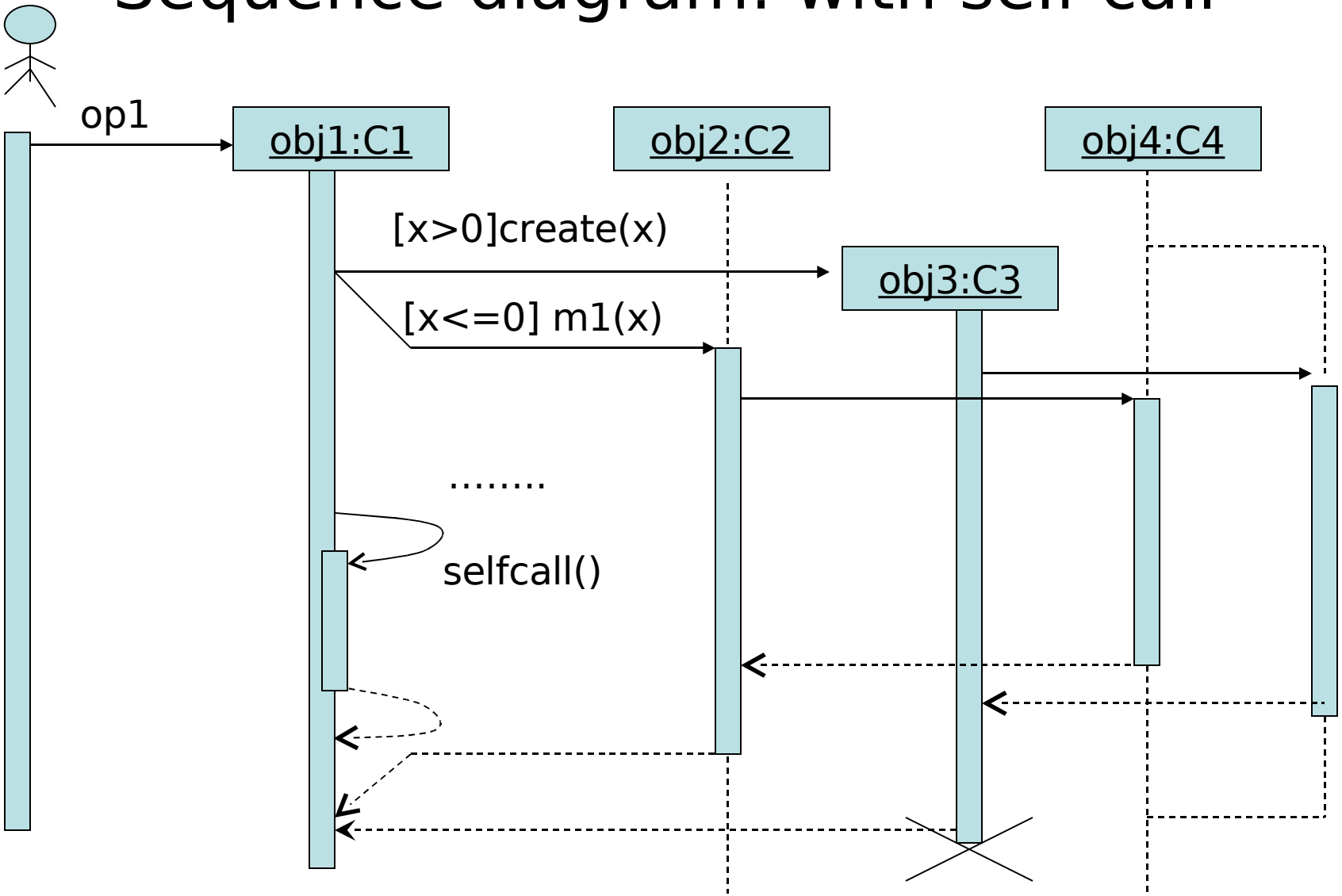
Sequence diagram: with object creation, destruction, conditions



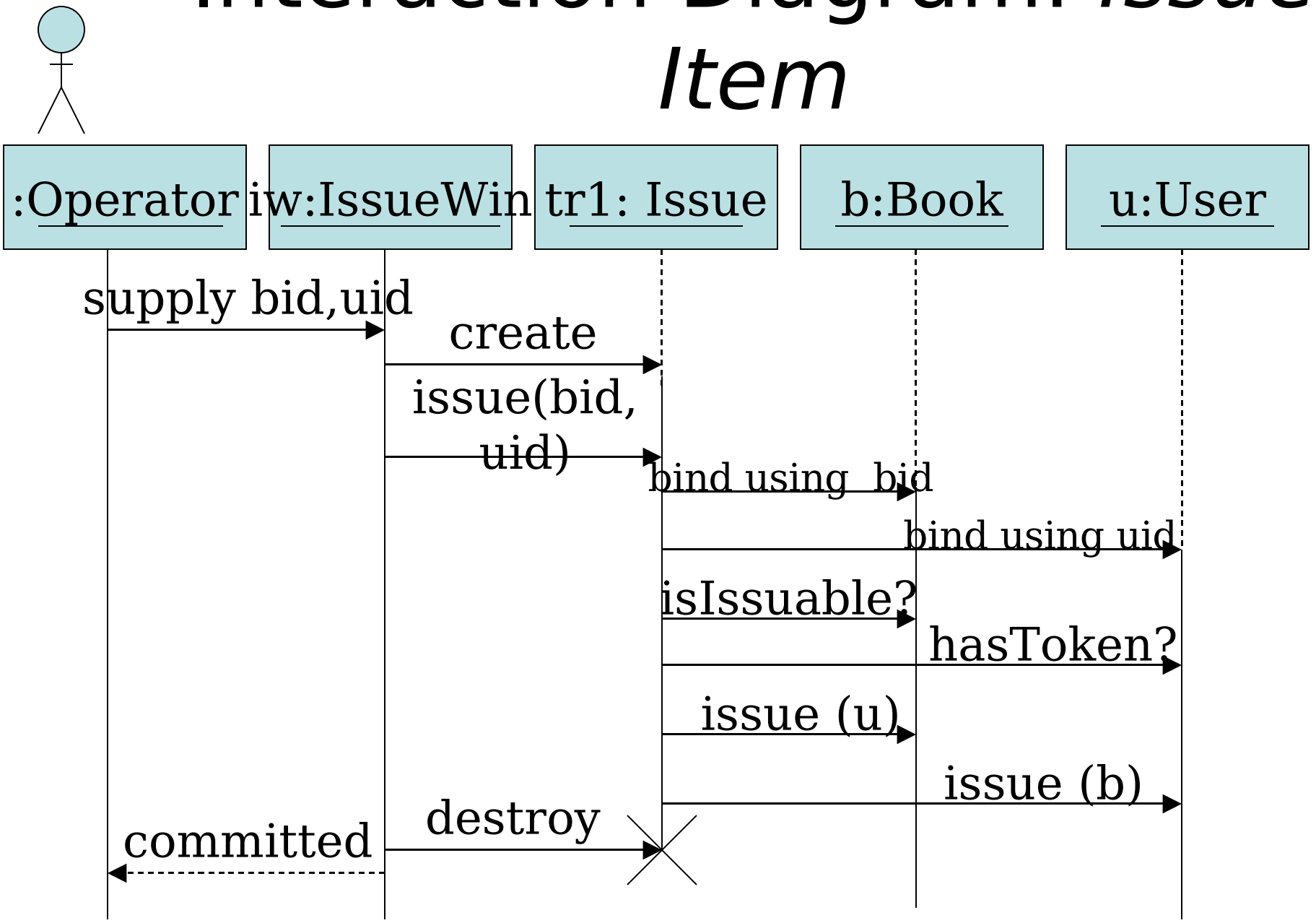
Sequence diagram: with threads of control



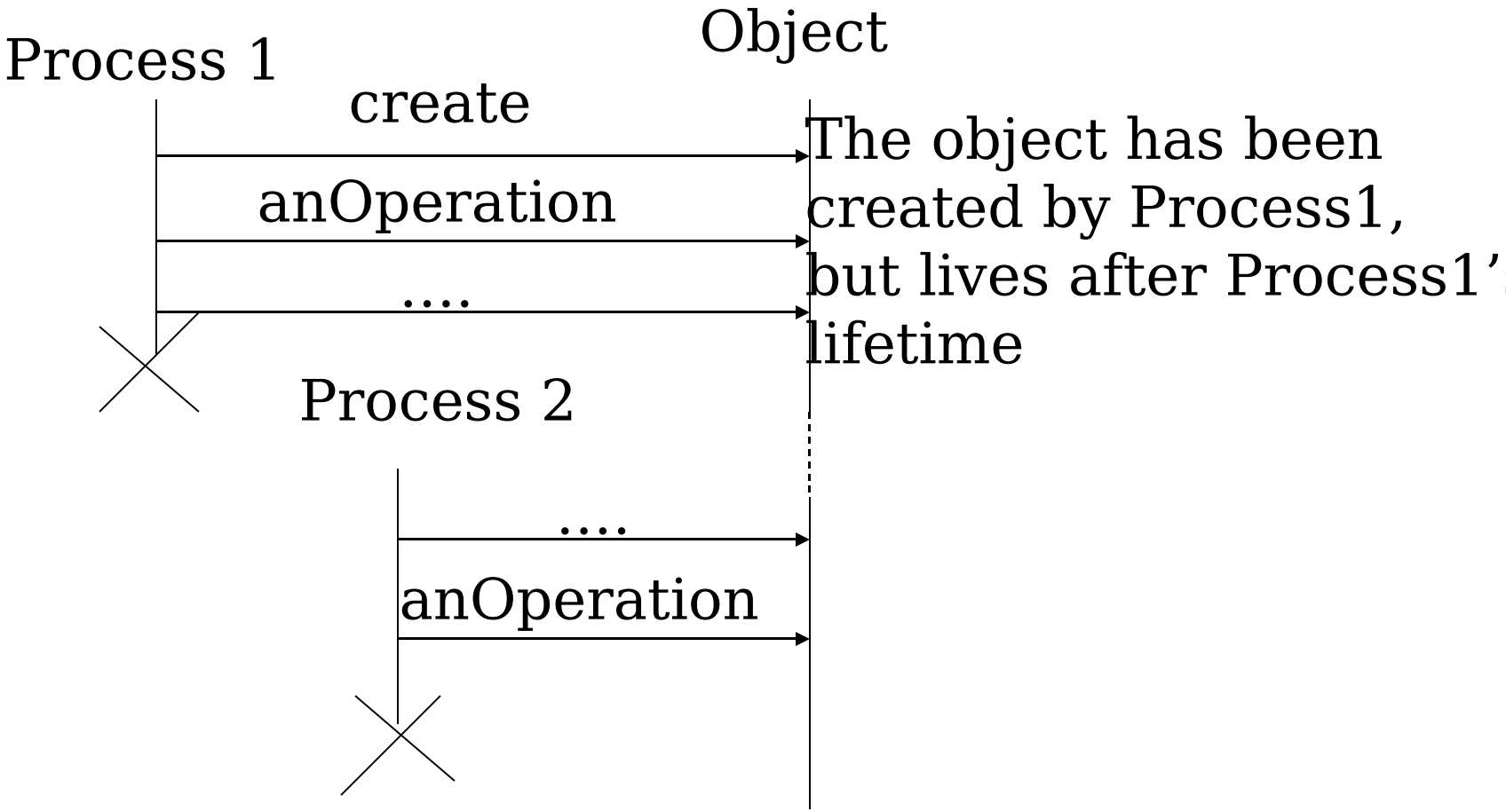
Sequence diagram: with self call



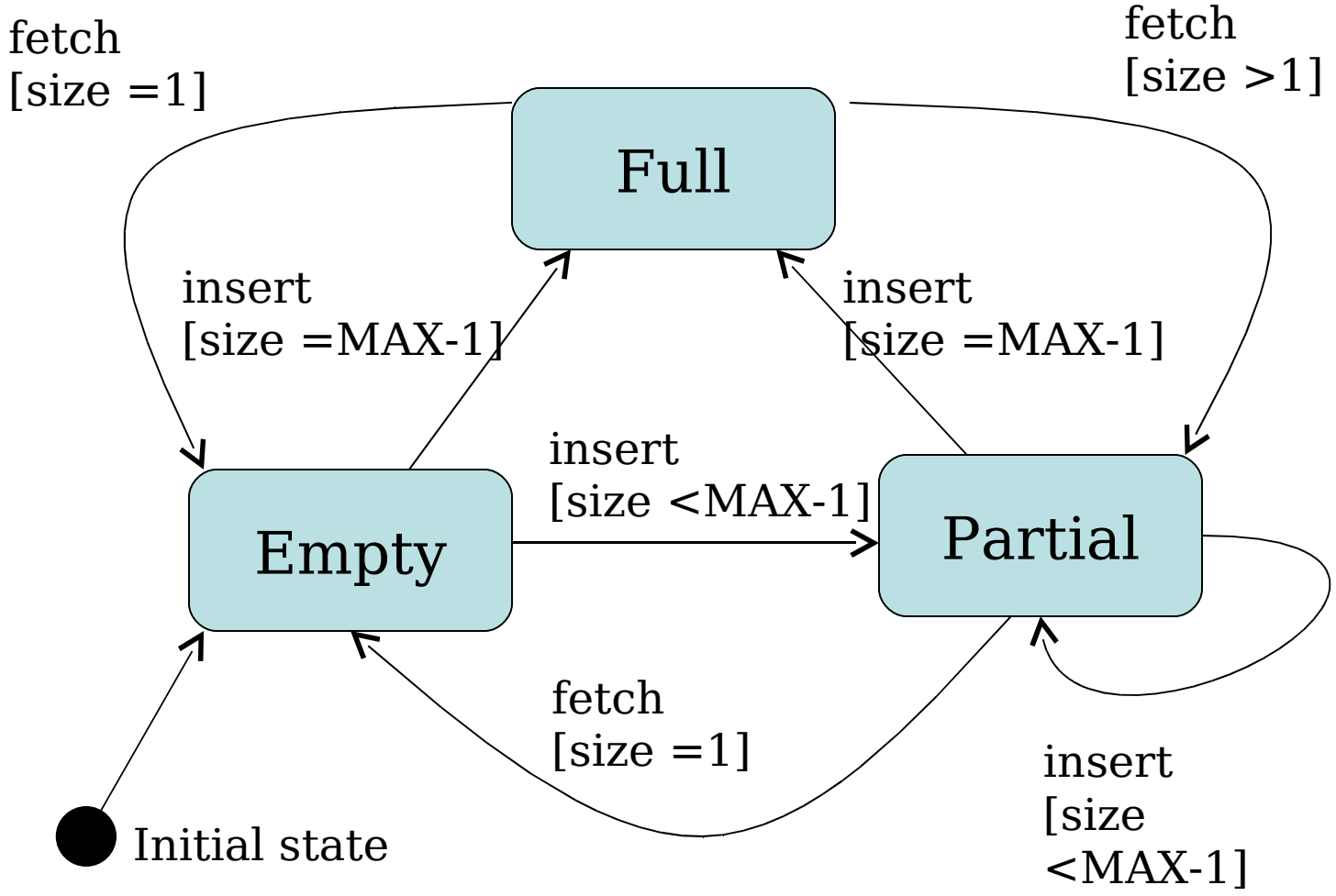
Interaction Diagram: *Issue Item*



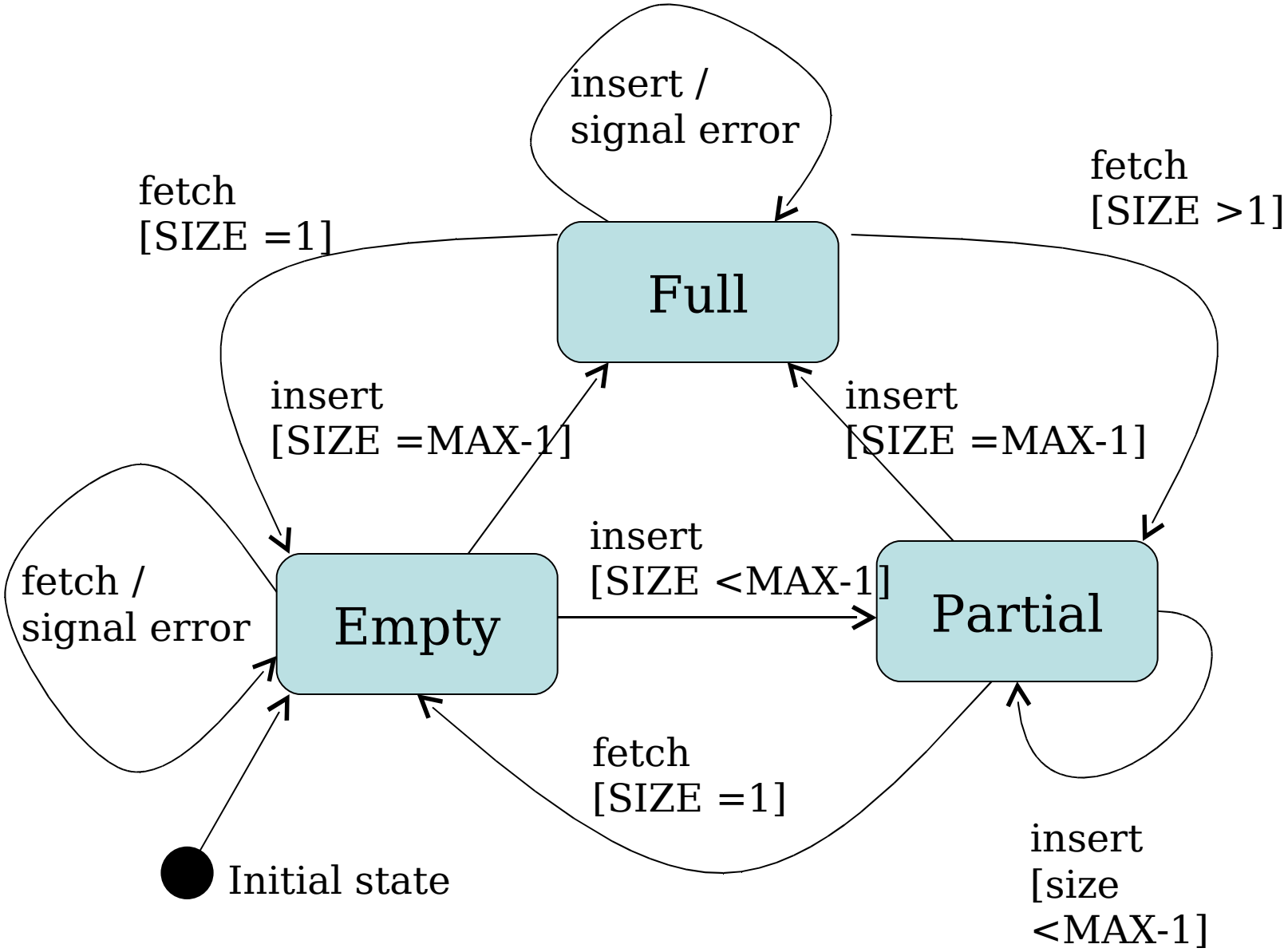
Modeling Persistent Objects



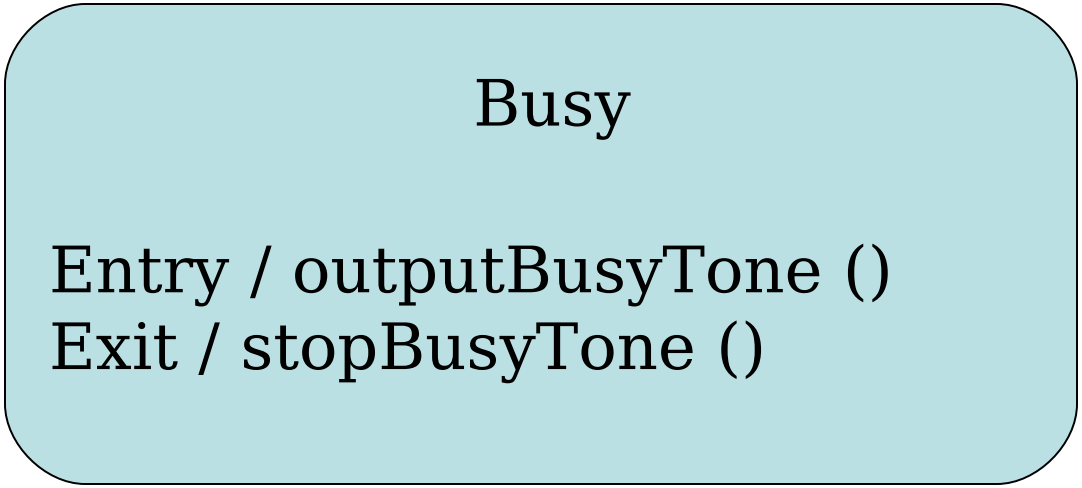
A State Machine for the Bounded Buffer Problem



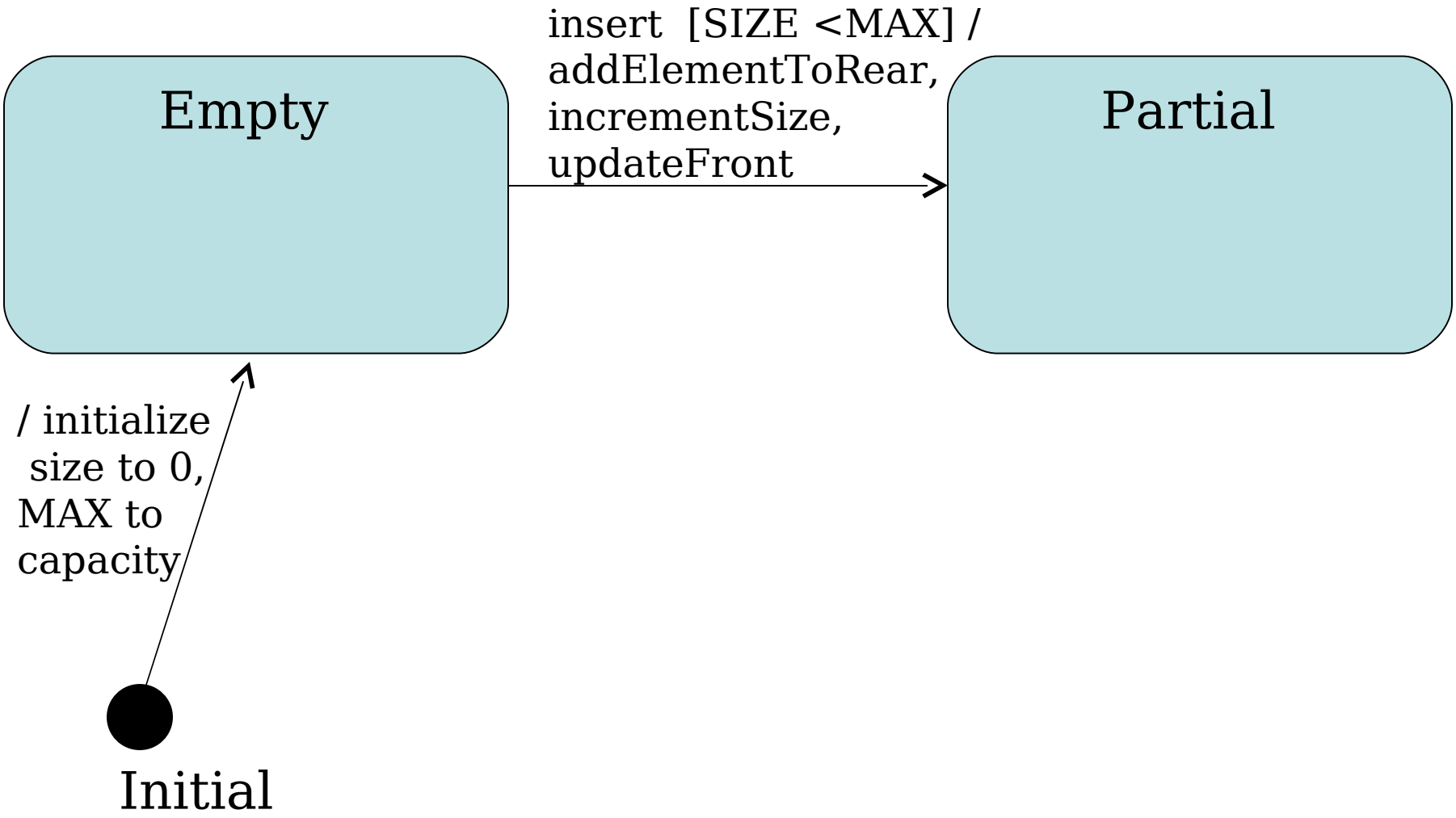
Handling Error Conditions



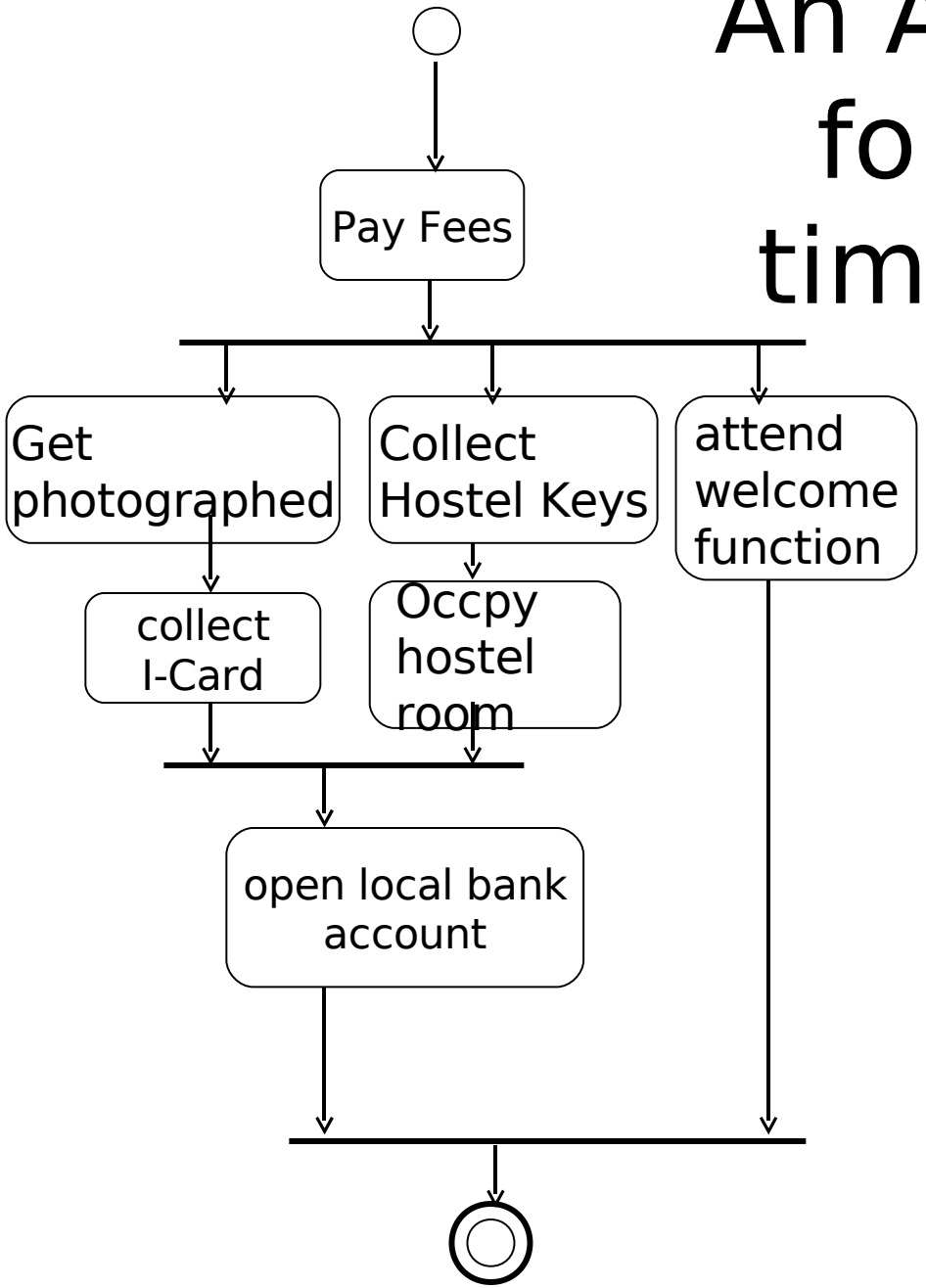
Actions in States



Actions on Transitions



An Activity Model for admission time formalities



References

- UML manuals & Specifications