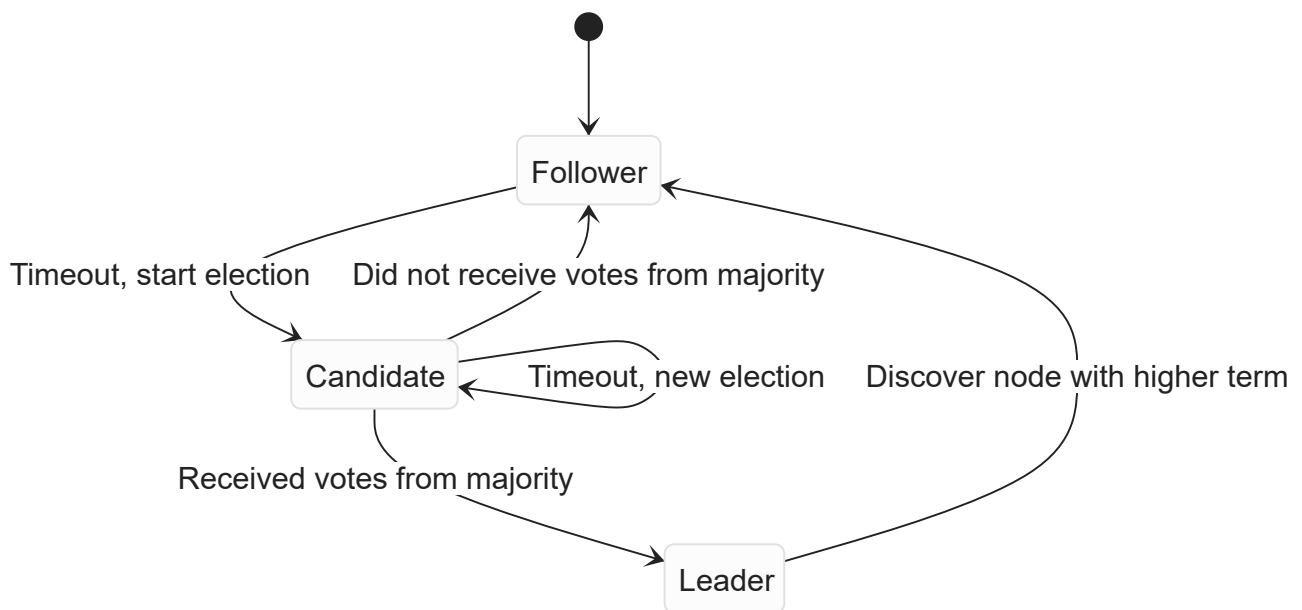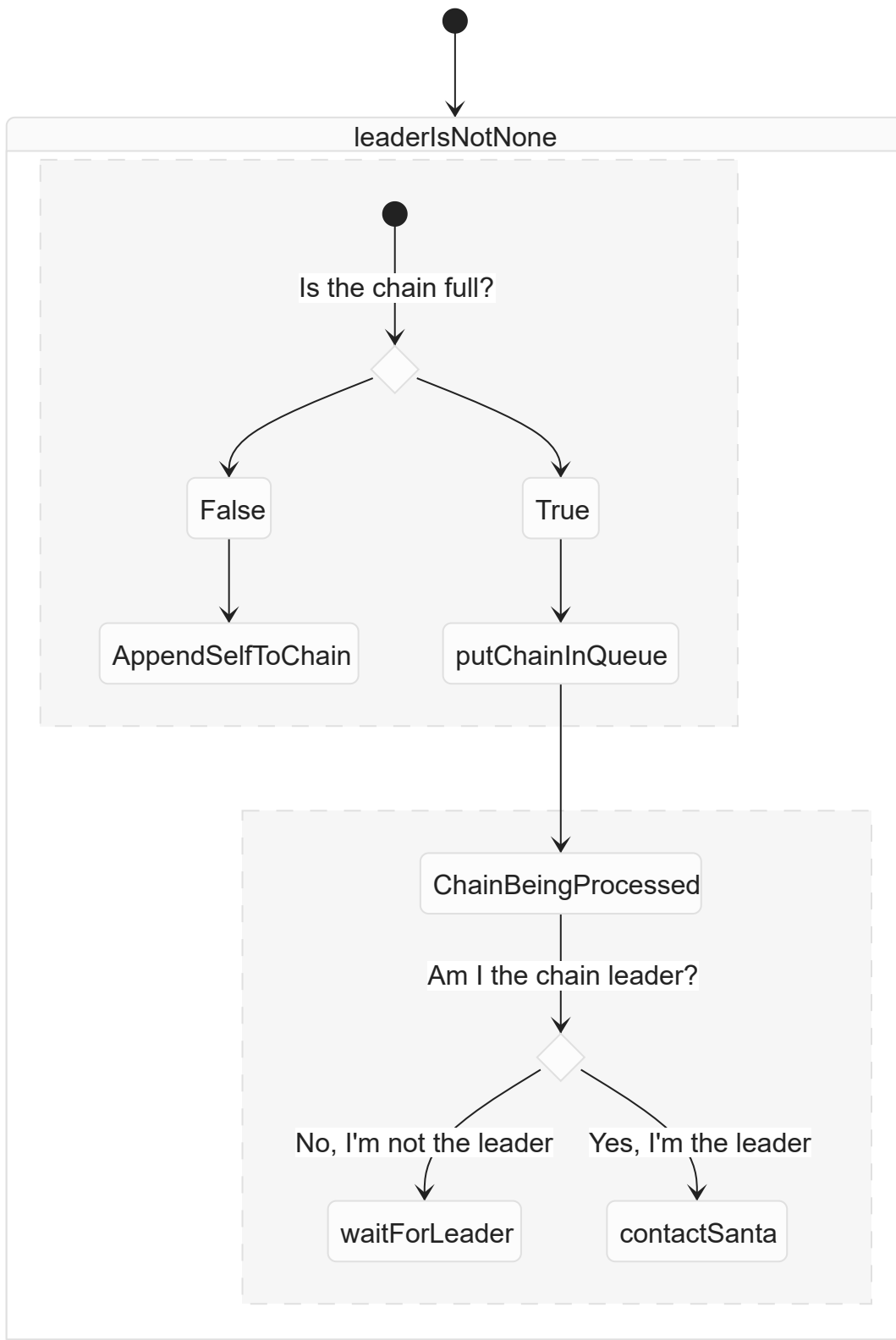# Elves cluster diagram

Election Process Diagram

In the context of achieving consensus among elves using the Raft algorithm, this diagram depicts the process of selecting a leader through voting.
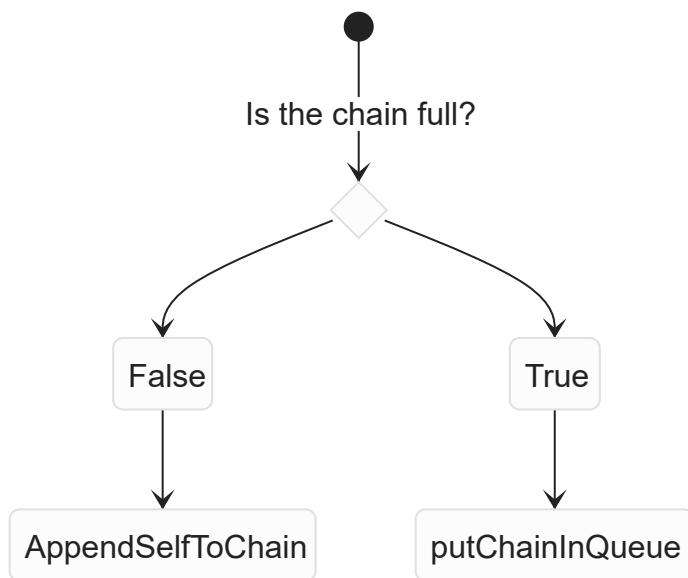

Leader State Diagram

This diagram illustrates the state transitions once a leader has been established within a cluster of elves. Note that these processes occur concurrently.
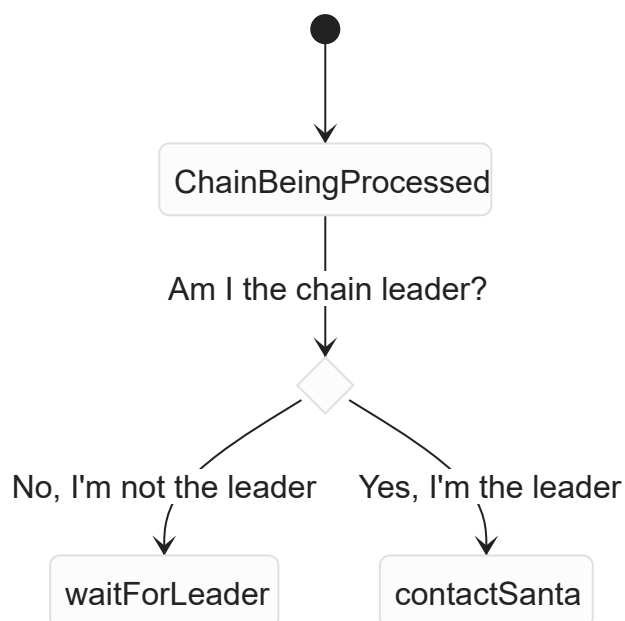
Chain Space Management

This diagram outlines the procedure for handling chain space constraints. If the chain is full, the entire chain is queued for processing; otherwise, an elf appends itself to the chain.

```
        ●
   Is the chain full?
        │
        ▼
        ◇
       ╱ ╲
      ╱   ╲
   False    True
     │        │
     ▼        ▼
┌─────────────┐  ┌──────────────┐
│AppendSelfToChain│ │ putChainInQueue │
└─────────────┘  └──────────────┘
```

Chain Processing

This diagram clarifies the responsibilities of the chain leader and the actions taken by peers within the chain during processing.

```
             ●
             │
             ▼
     ┌──────────────────┐
     │ ChainBeingProcessed │
     └──────────────────┘
             │
      Am I the chain leader?
             │
             ▼
             ◇
            ╱ ╲
           ╱   ╲
No, I'm not the leader   Yes, I'm the leader
      │                        │
      ▼                        ▼
┌──────────────┐      ┌──────────────┐
│ waitForLeader │      │ contactSanta │
└──────────────┘      └──────────────┘
```

Elf Communication Sequence Diagram

This sequence diagram showcases the communication flow between an elf encountering an issue and Santa. Note that Santa remains inactive until prompted.

```
Elf                          Santa

            We have a problem
        ─────────────────────────▶

          Go back to work, elves!
        ◀┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄┄

Elf                          Santa
```