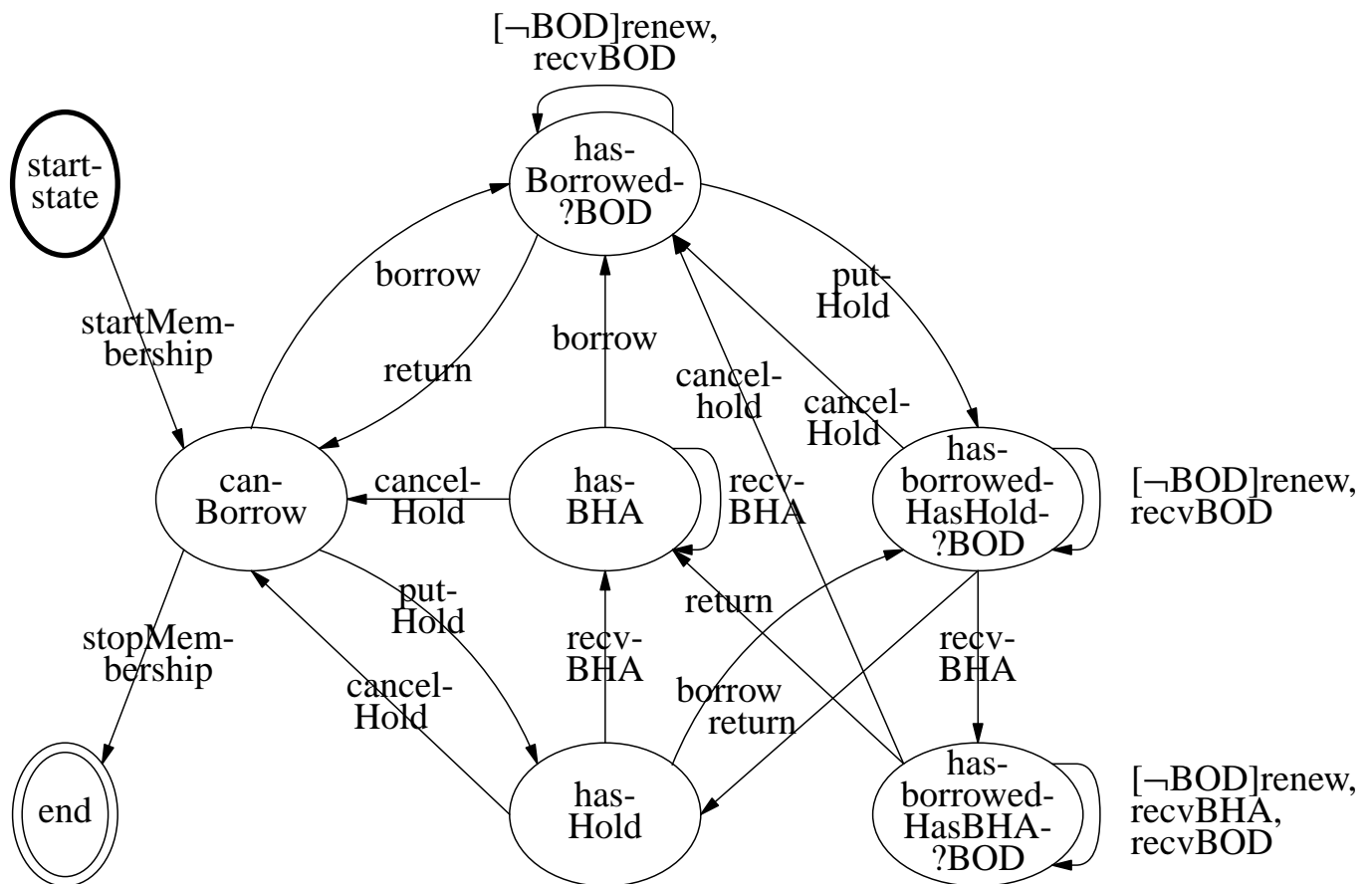


A SIMPLIFIED MODEL USING GUARDS

Following state-pairs are merged:

- {hasBorrowed, hasBOD}, {borrowedAndHasHold, hasBODandHold}, and {borrowedAndHasBHA, hasBODandBHA}.
- The part "?BOD" in a state-name means BOD-notice may or maynot have been received. The guard "[\neg BOD]" means BOD-notice not received.



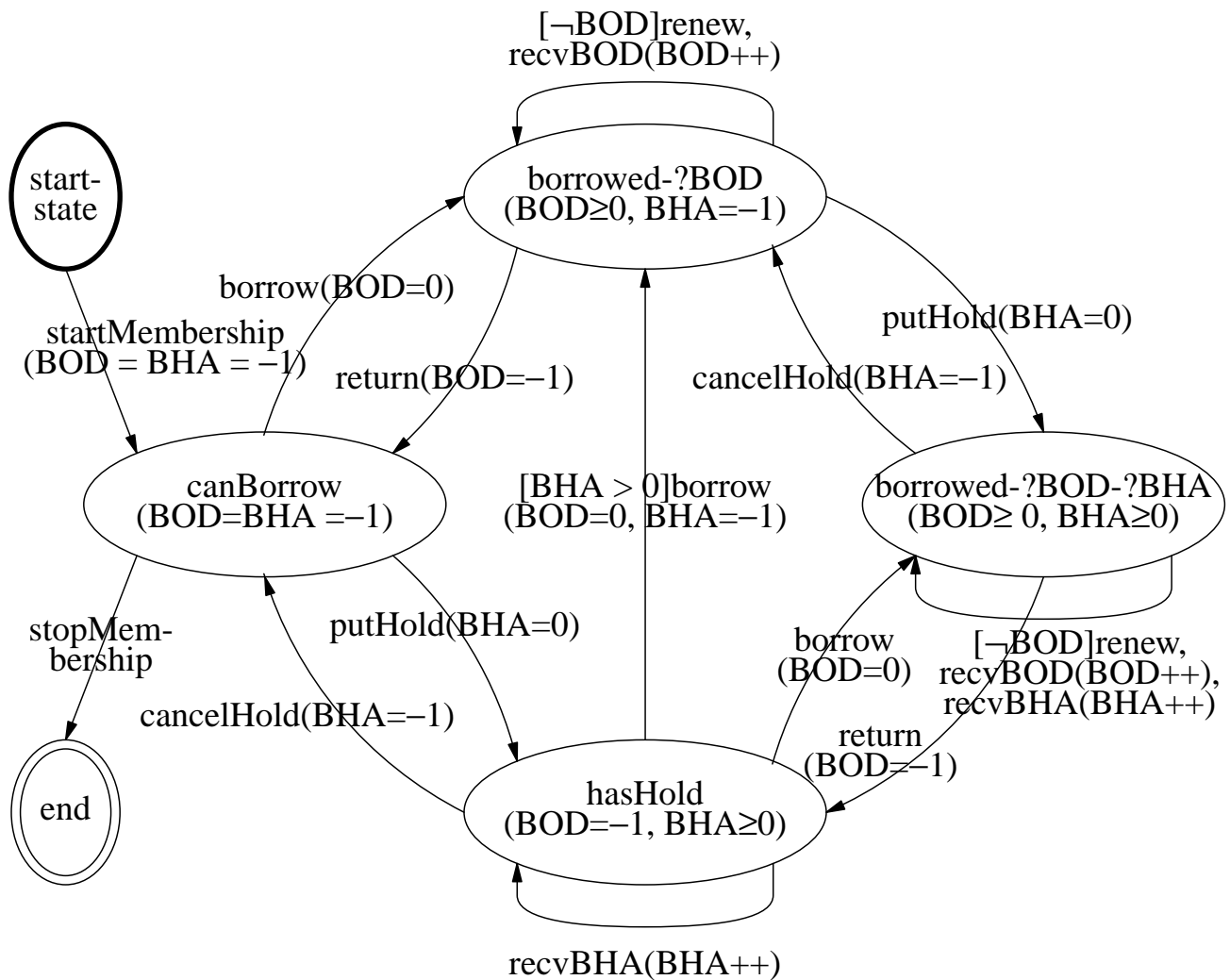
Question:

- ? Show the state-diagram if we merge the states has-borrowed-hasHold-?BOD and has-borrowed-hasBHA-?BOD, (Hint: some more transitions will now have new guards.) Should we also merge has-hold and has-BHA at the same time?
- ? Modify the model by adding "search" operation for books.

IMPLEMENTATION OF THE STATES

State = (BOD, BHA):

- BOD = -1 (initial value), BOD = 0 (borrowed but no BOD-notice received), and BOD ≥ 1 (otherwise).
- BHA = -1 (initial value), BHA = 1 (has hold but no BHA-notice received), and BHA ≥ 1 (otherwise).
- Shown next to each state is the properties of these variables, and next to each action is shown the update of these variables.



- How will you handle the case of multiple books borrowed and holds on multiple books?

