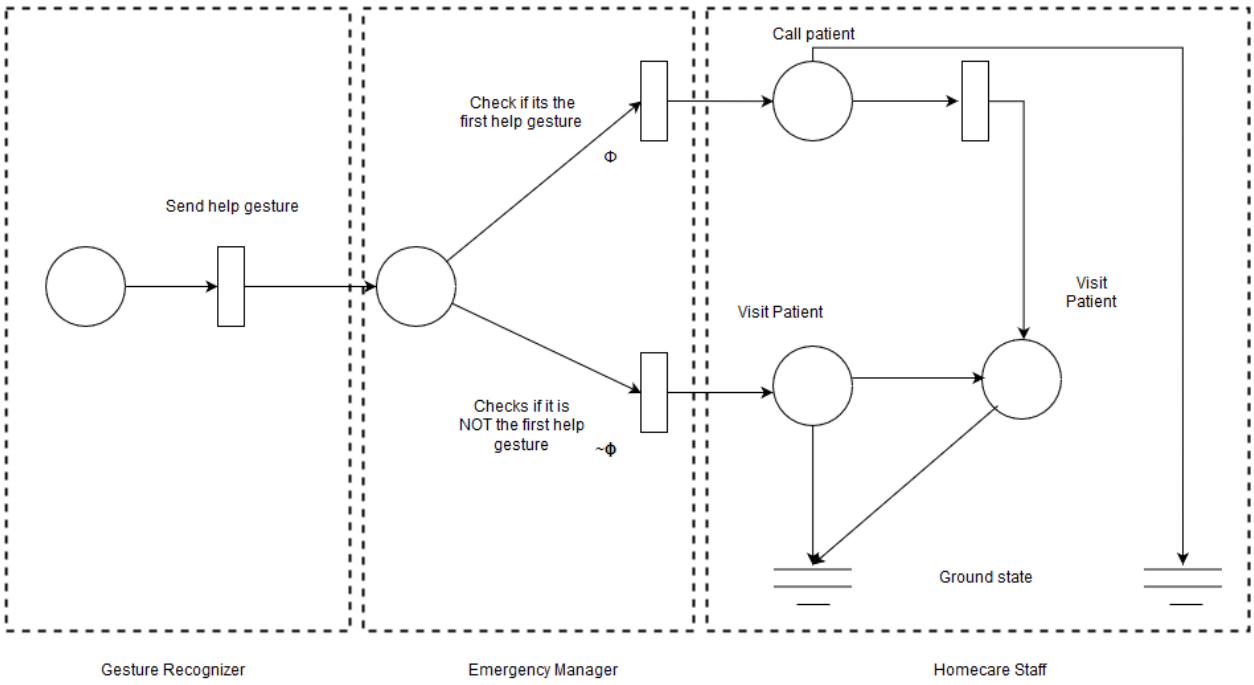
Software Engineering Exercise 3

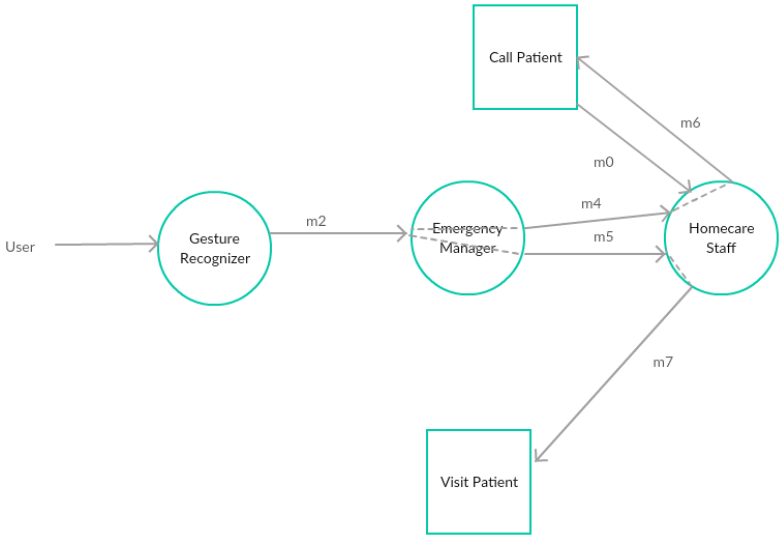
Question a:

Shown below is the conversion of the active index into the Petri net structure



Question b:

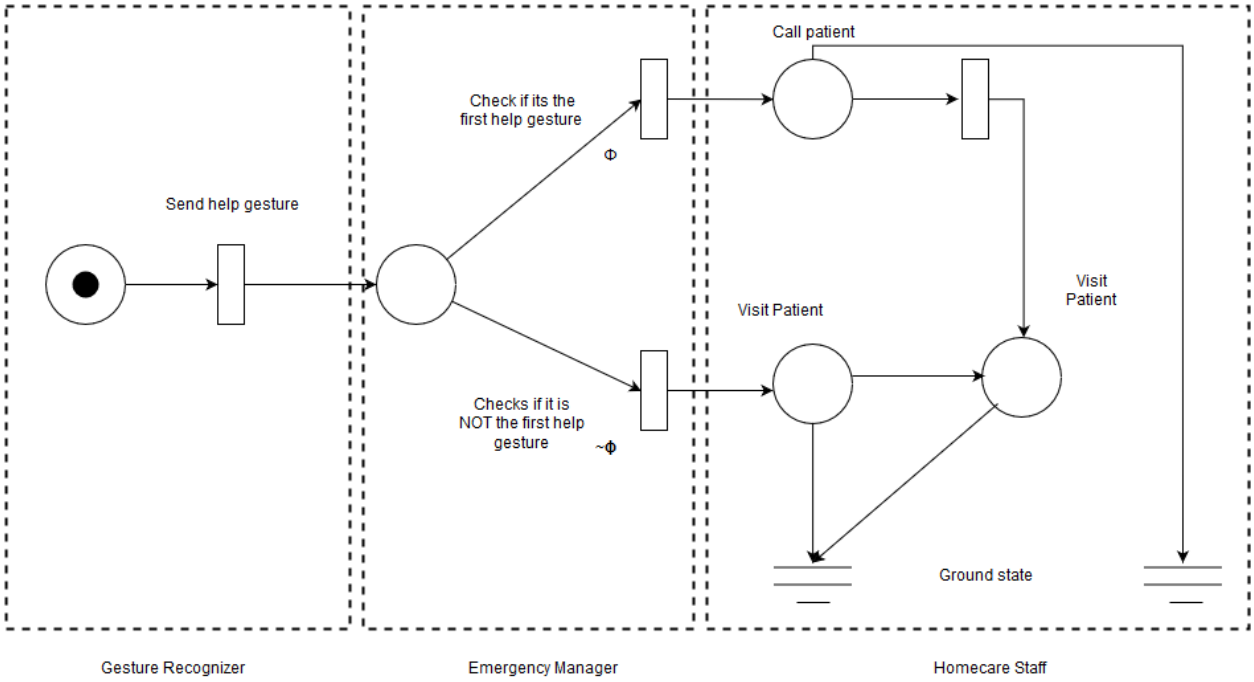
Diagram from previous exercise:



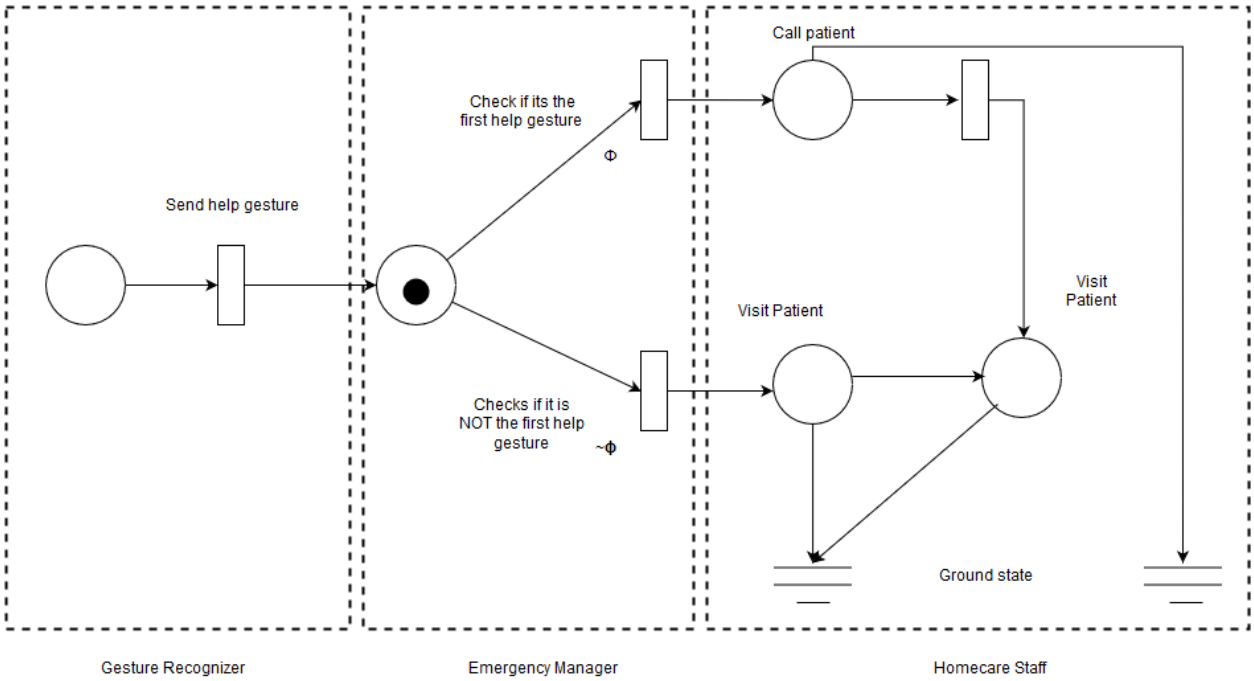
Keeping that diagram in mind we have designed the Petri net to illustrate the various scenarios.

We will consider the various scenarios below.

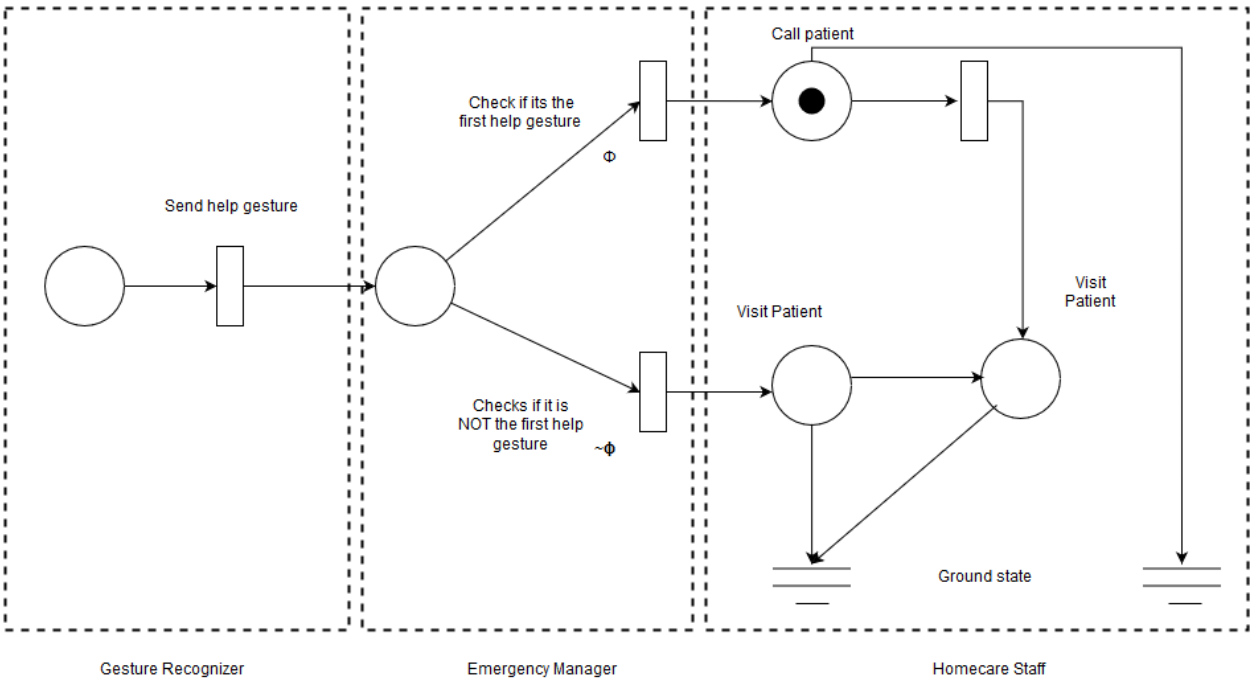
Scenario 1: Patient asks for help once



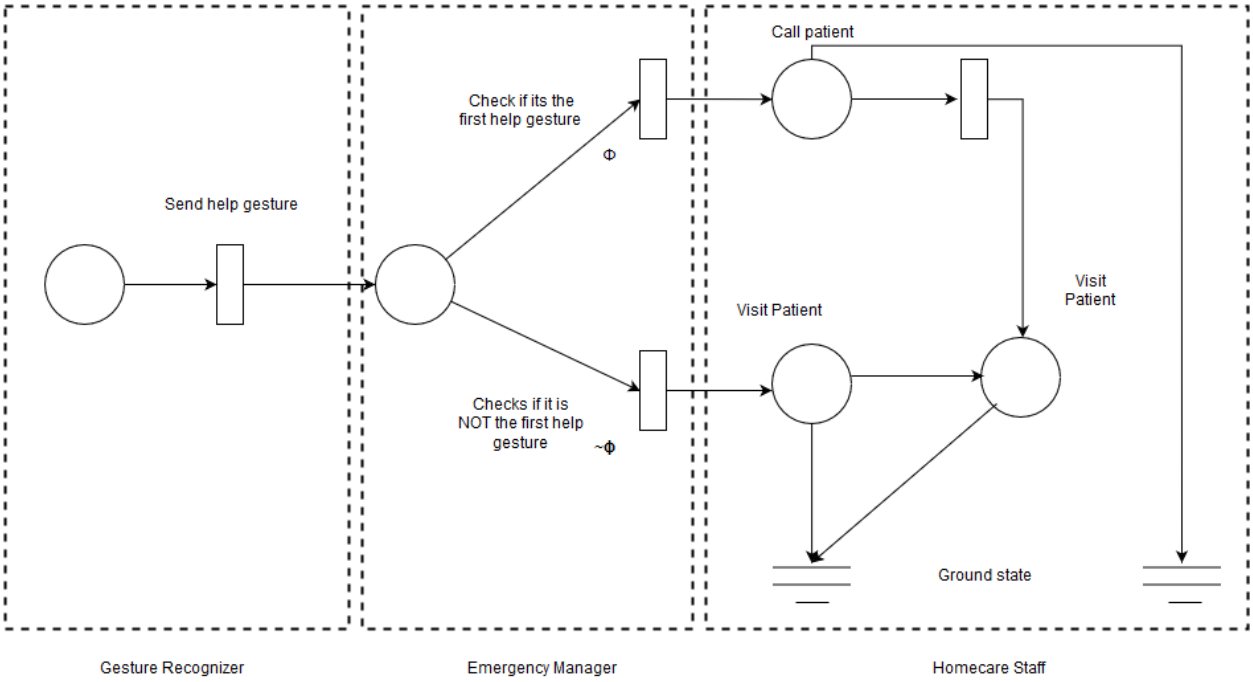
Here we see the token being generated



The token is then passed to the emergency manager who then decides if it has seen such a token before. This judgement call will then be processed in either of the two messages show. Thus the next communication will either be to the Call Patient state or the Visit Patient state.

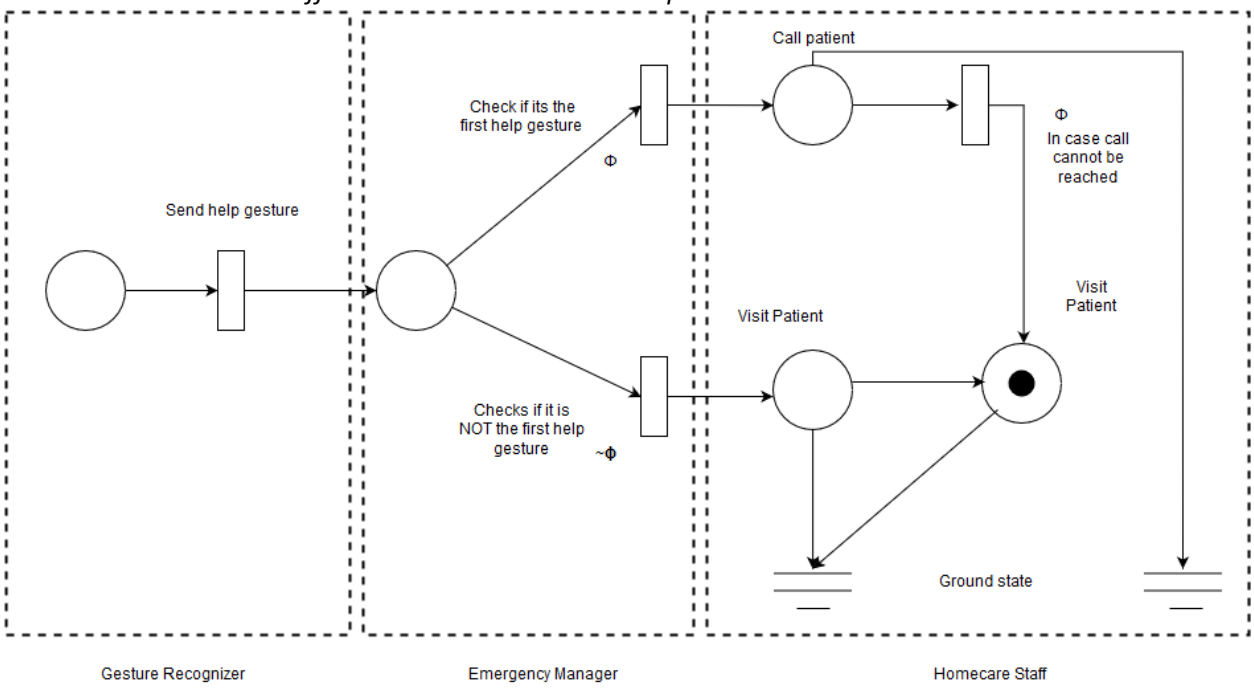


We see that since the Emergency Manager has not seen the a help gesture message before he forwards a Call Patient message to the Homecare staff

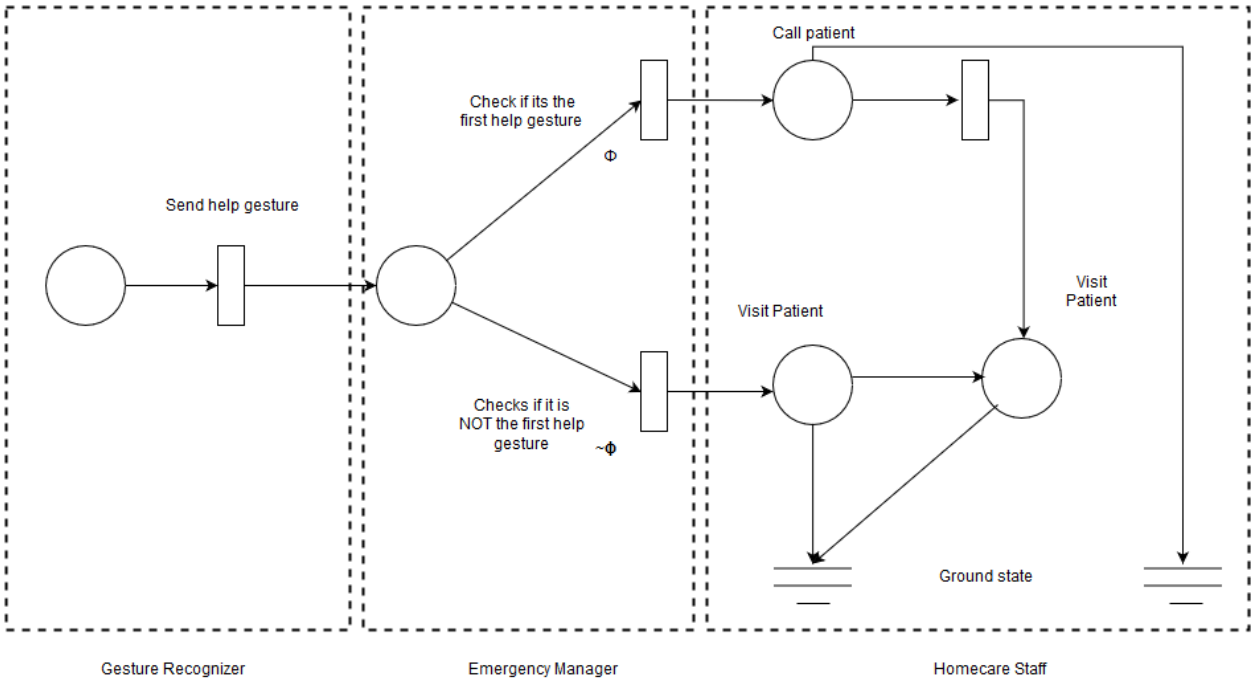


The call then takes place and then the state transforms to the grounded state and returns to the original structure

Scenario 2: Homecare Staff cannot reach Patient on telephone



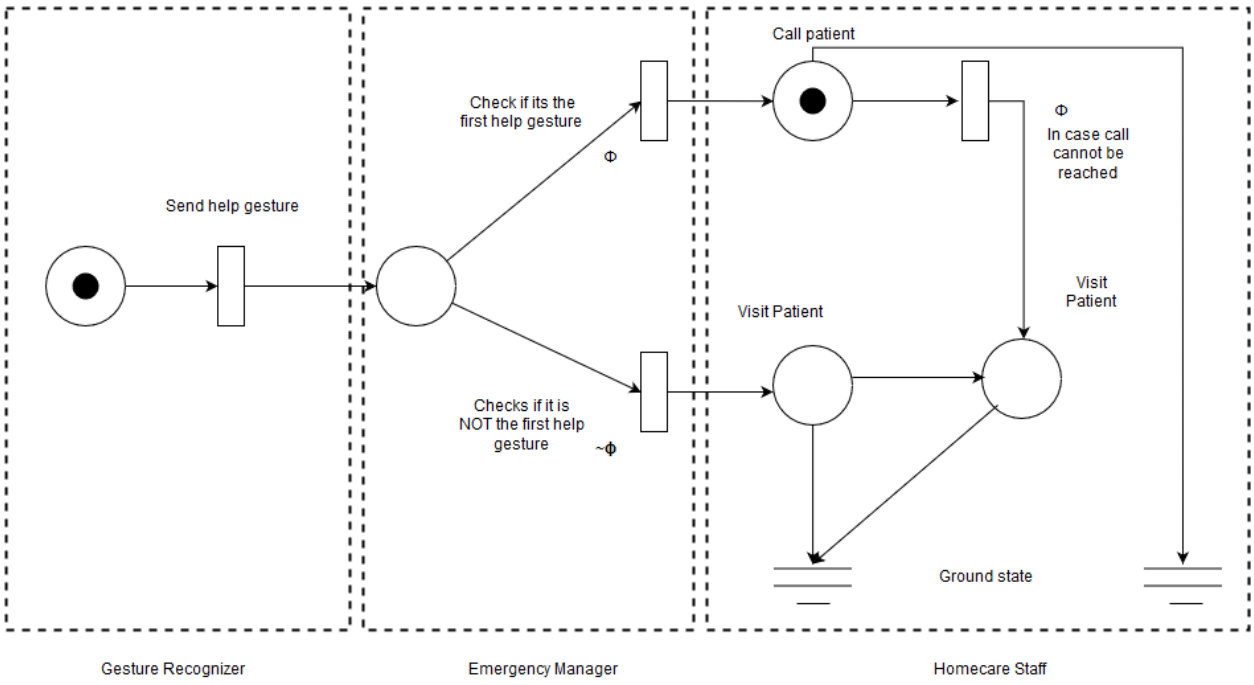
In such a case the token then gets shifted to the Visit Patient place and now the Homecare Staff is tasked with visiting the patient



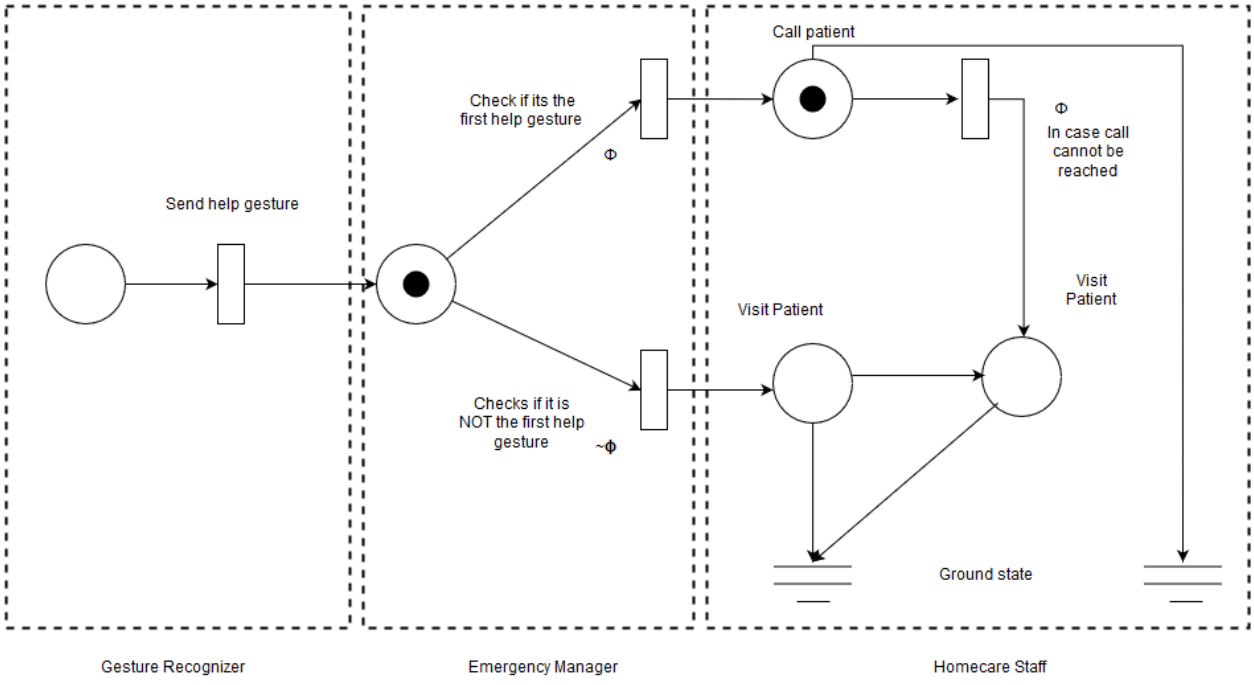
Once they have visited the patient the state transforms to the grounded state and it returns to the original state

Scenario 3: The patient gestured for help twice

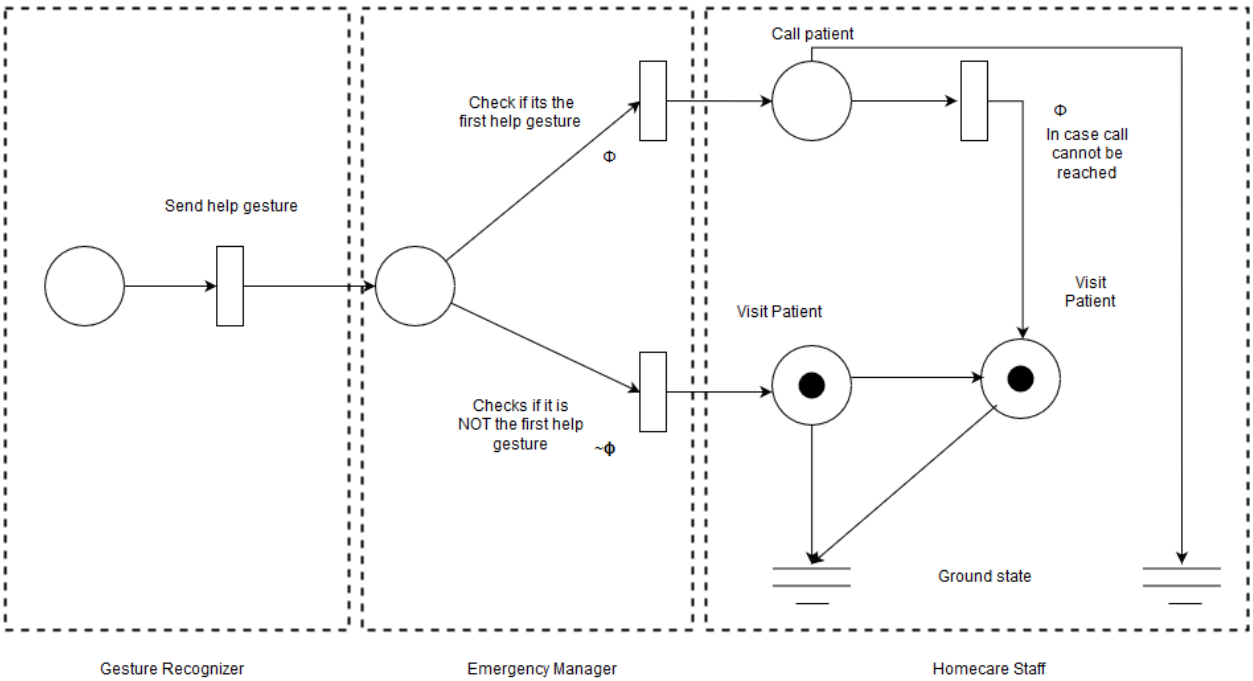
We pick off from where the token is already present in the Call patient place



We see a new token has been generated

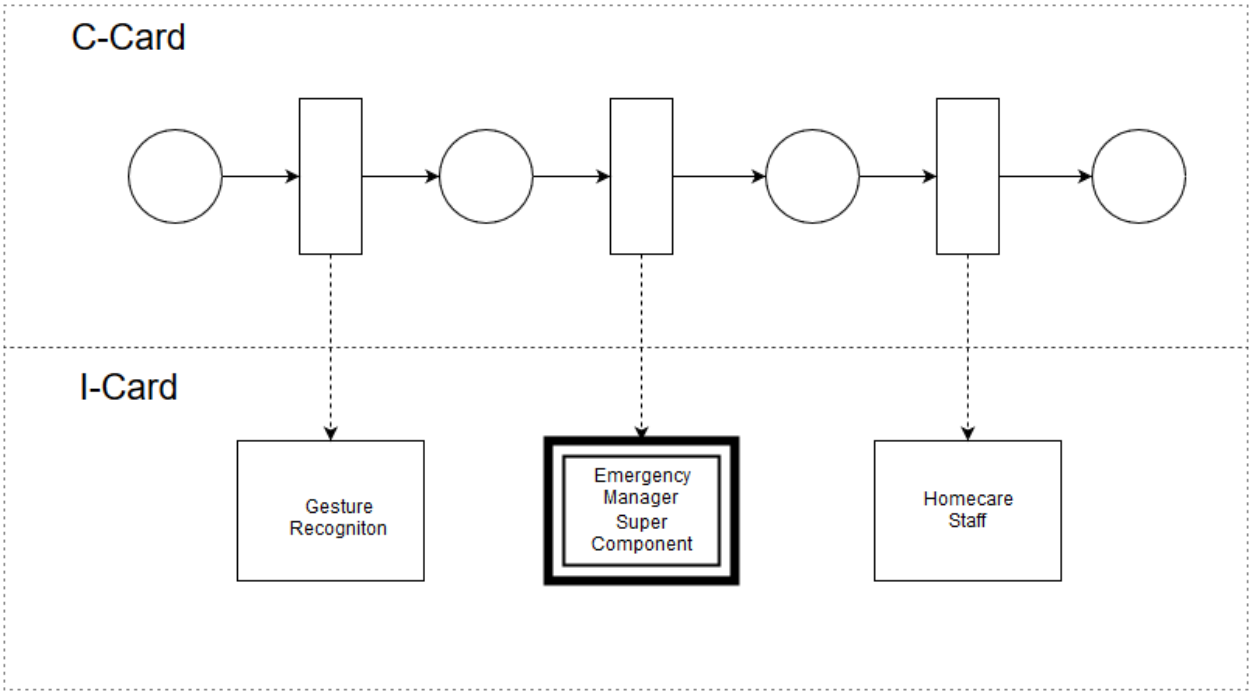


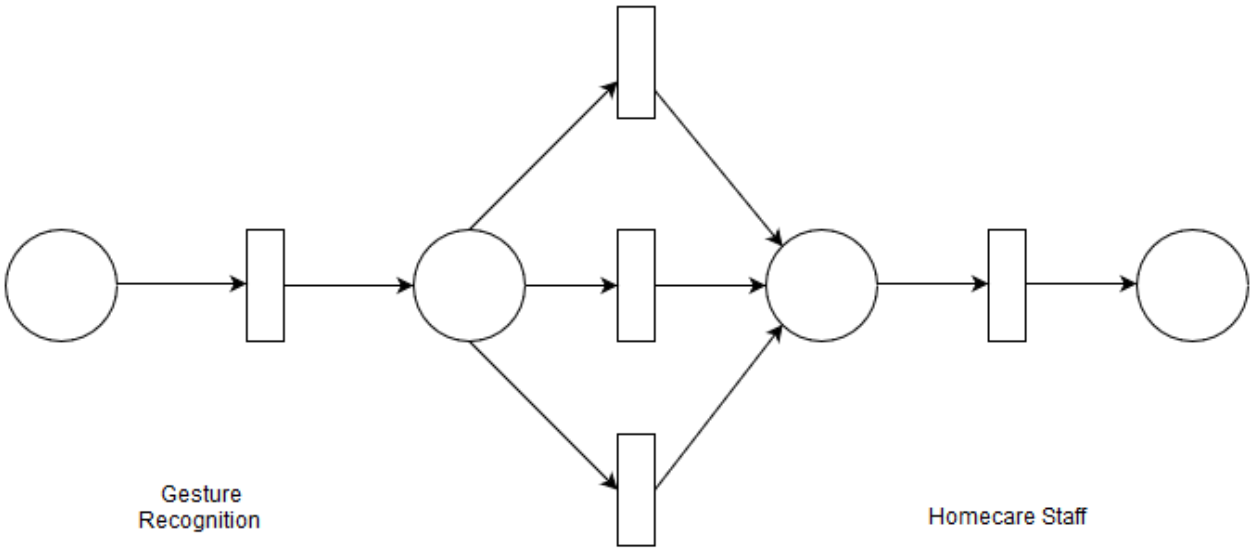
This new token is then passed to the emergency manager



The emergency manager passes it to Visit Patient which eventually sends the Homecare Staff to check on the patient and the token is grounded

Question c:





The Emergency Manager is the super component in this system. This is because the emergency manager is responsible for making a decision in this system. The decision corresponds to whether it should send the signal to call the patient or to visit the patient. The third transition corresponds to the dummy node which must also be included for an adequate representation of a super component.
Thus we have illustrated the super component and the I-cards and C-cards.