

1) What should the behavior be when the Door never goes low?

Example: Someone picks up an item but gets stuck there.

If the door never goes low - the machine should not do anything until the door is closed. It should just remain in that state. The only thing that can remove it from this state is a door close or a reset.

2) Item code selection : What is the expected behavior of the input ITEM code before/ in between inputs? Will this value return to numbers not part of the range 0 through 9?

This is a good question and the input key_press (1bit) has been introduced to deal with it (see project v3) . The key_press input must also be high simultaneously for the code to be read.

3) When the invalid transaction occurs the output goes high and goes to state idle. The question is regarding whether this invalid transaction signal will also be set to 0 upon transitioning to idle state

In the idle state, all outputs are set to 0. There could be an intermediate 'failed tran' state for one cycle if required.

4) When you refer to the successful Vend does this mean the reset signal is applied and all counters go to 0 or simply return to the idle state?

After 'vend', the machine goes to idle. It does not reset. On transition to the idle state, all outputs are set to 0, but the item counters are not affected. On reset, both item counters and outputs are set to 0.

5) What would the case be when CARD_IN goes low in the middle of the transaction. Will the transaction abort and go back to idle?

This ambiguity has been clarified in v3. Card in can go low any time after the transaction begins (assume the card's info. is stored by the machine as soon as it is inserted). The 'reload input is' valid only when the machine is idle. Additionally, if card_in is ignored if it goes high after reload becomes high. A new transaction can begin only once reload goes low.

6) What if CARD_IN stays as 1 throughout the transaction and through it finishing? Then should another transaction start immediately once the current transaction finishes?

Yes. But this may not require any special state. For example : The FSM could vend, become idle, sense card_in and begin again.

NEW:

7) Changing inputs at the same clock edge as the state update is causing unpredictable behavior.

You can change the inputs (in the testbench) at the negative edge of the clock (or sometime before the clock edge) so that they are stable at the clock edge.