Assignment 2a

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Problem 1 Vending Machine:

In this model several input events are created. A state chart is used which has several states to perform the requirements. at first the machine says welcome. When start_button event is pressed that it says to insert money by going to coininsert state from idle state. So when any specific amount is inserted, it starts to count the coin to keep track of the balance through turning on the event specific for each type of coin. Then through 'order' event it goes to order state shows choose option. By using event 'option_A or Option_B user can choose type of Snacks. if the coin_count is enough to buy a chosen snack it delivers the product otherwise it shows "Sorry "message for a moment and goes to coininsert state and display a msg 'insert_coin'. Also, there is one output data that is ''return'" which pays back the user any excess amount of money they pay. So, when a product is delivered user can use 'insert_more_money' event or 'order' event to buy more snacks, otherwise by using ''Finish'' event user can go back to idle state of the machine. User can inset coin and take their money back without ordering any snacks using the 'Finish' event. A and B are two output data to show snack A and snack B that is delivered to user. It shows always one as it delivered one by one. A pulse generator is used to trigger the events.

Problem 2 Microwave Oven:

This model is designed to perform some actions for microwave oven. At first machine is in idle state. When turn_on button is pressed it goes to cooking _time_power state where user can set_time and set_power as initially cooking time and cooking power is zero. There is a door which is expressed through a toggle switch. At first set_door event must be zero. When set_door is set to 1 it goes to door_close state. From there if start_cooking is pressed, it starts cooking, a matlab function is used to count the time here. By which it's keeping track of time_remaining of the display.so when time_remaining is zero it goes to cooking_finish state where it gives a alarm trough a lamp. Lamp becomes red when it gives alarm otherwise its green.Stop button needs to press to stop the alarm and go to idle state . User can change the cooking time and power while start_cooking is going on. A time_counter MATLAB function is used to count the idle time of the machine. So that if user is inactive for 300 secs, after setting the time and power and door_close, it resets everything to idle state. A suspend cooking state is there which activate when a user press set_door=0 that is open the door or press stop. from there it will not activate the cooking again unless set_door=1 that is door close and also user must press start_cooking for resuming the cooking. IF the oven is not cooking, the Stop button acts as a reset, which resets the remaining time to 0. A pulse generator is used to trigger the events. One limitation for this model is through stop press it reset the displays, but it doesn't reset the Simulink constant, so user needs to reset the input data manually.