**Assumptions:**

* **Design Assumptions:** The logic has been designed keeping in mind the real-life situation in an old age home. The pill dispenser is made for the pills which are daily used by elderly people like vitamins, diabetes medicine, heart medicine etc. The pills required for treatment of special illness is excluded from the machine. Moreover, pills potentially hazardous to a patient it is not prescribed to are not included. In most of the cases an elderly person does not take more than 8 different types of pills in a day and these 8 types of pills accommodate most of the common medicines used by patients (verified by a doctor). More over 1 pill type of pill is not taken more than 7 times in a day is also a reasonable assumption we made. In general, the user of the pill dispenser is expected to know the type and quantity of pills needed by him/her (patient himself/herself) or the patient they are taking the pills for (nurse/doctor).
* **Input Assumptions:** The user expected to input the number and type of pill both before clicking on the dispense button. The button when pushed, first resets the circuit (except the Inventory part) and then transfers the data and starts the clock cycle. The user is expected to input only in the range as specified below:
  + **Quantity of pill:** Within a range of 1 to 7 (both inclusive).
  + **Type of pill:** One of the eight type of pills.
* **Output Assumptions:** The circuit can be used infinite number of times consecutively. There are eight output pins. Each goes to 1 to indicate the dispenser to dispense 1 pill. The number of times an output goes to 1 in an operation is limited to 7 (max number of pills that can be dispensed at a time).
* **Miscellaneous:** The machine is outfitted with an inventory management system. This system indicates the admin (or nurses), using an LED light, for low number of pills (less than 5) of a particular type. So, there are in total 8 LED indicator lights right beside the selection of type of pill that can be used by the user to ensure that the there are enough pills for them to dispense. Upon the lighting of a LED, the admin (or nurse) can open up the machine and add more pills to fill it to the maximum point of 255 pills per type. As soon as this is done the admin pushes a button adjacent to container of that type to let the dispenser know that the pills have been refilled. This shuts off the LED light as soon as the machine operates again.

***Note: The limitation of 8 types of pills can be eliminated easily by just replicating the logic for higher number of bits input.***