1. Given the following transition and output tables, produce their Moore machines
   (a) 
   \[
   \begin{array}{c|cc|c}
   \text{state} & a & b & \text{Output} \\
   \hline
   q_0 & q_0 & q_1 & 1 \\
   q_1 & q_0 & q_2 & 0 \\
   q_2 & q_2 & q_2 & 1 \\
   q_3 & q_1 & q_1 & 0 \\
   \end{array}
   \]
   (b) 
   \[
   \begin{array}{c|cc|c}
   \text{state} & a & b & \text{Output} \\
   \hline
   q_0 & q_3 & q_2 & 0 \\
   q_1 & q_1 & q_0 & 0 \\
   q_2 & q_2 & q_3 & 1 \\
   q_3 & q_0 & q_1 & 0 \\
   \end{array}
   \]

2. Given the following Moore machines, produce their transition and output tables
   (a) 
   (b) 

3. Convert the above Moore machines to Mealy machines

4. Convert the following Mealy machines to a Moore machine
   (a) 
   (b) 

5. Design a machine to perform a parity check on the input string. The output of the string ends in 1 if the total number of 1-bits in the input is odd and 0 if the total number of 1-bits is even. Did you choose a Mealy or Moore machine? Why?