1. A digital filter’s behavior can be represented by the automaton shown below. In an accepting state the automaton outputs a ‘1’ while in non-accepting states it outputs a ‘0’. What would be the sequence of states of the automaton and the output of the filter in processing the following input: 0 1 0 1 1 0 0 1 1 1 0?

2. Design an automaton that accepts only those character strings whose second and third characters are ‘a’ and ‘b’ respectively. For example the automaton should accept strings like ‘babble’, ‘cab’, ‘xabyz’, ‘aabc’. 