Question 2) Short Question answers
1) What does "Read First" mean in the context of memory?? (2 points)
   a) Simultaneously read the current value and update
   b) Read the new value after update
   c) Read the current value and update the signal later
   d) Only read and no write

2) The output of the sequential circuit is regarded as a function of the time sequence of ________.
   (2 points)
   1. Variables
   2. Outputs
   3. States
   4. External inputs
   a) 4 and 1
   b) 1 and 3
   c) 1 and 2
   d) 3 and 4

3) The FSMD routing circuit in the datapath is constructed by customized ________.
   (Hint : The circuit routes the source registers’ outputs to the proper functional units and routes the calculated results from the functional units to proper destination registers using the state_reg as control signal) (2 points)
   a) Adders
   b) Subtractors
   c) Multiplexers

4) What is the difference between the Moore machine and the Mealy machine? Discuss the design tradeoffs with respect to performance and area overheads.

Points breakdown:
   a) Difference between Moore machine and Mealy machine: 2 points
   b) Performance in terms of clock cycles and no. of states: 3 points
Question 3) Write the VHDL instructions for register a and r?

Entity

Architecture

Begin
    Process( )
Question 4) For the following branch predictor, assume the initial state is s0. Design the ASM chart for the following state machine.
No VHDL code is required.