This is a **open** book/note quiz.

**NO** texting a friend, phoning a friend, talking to a class mate, or such is allowed.

(15 points) Show the gate implementation of a circuit having a single sequential input X using a one-hot approach that detects both the sequence 110 as the last 3 inputs or 1101 as the last 4 inputs. The circuit has two outputs, Y which has a value of 1 when 110 as the last 3 is detected and is 0 otherwise, and a second output Z which has a value of 1 when 1101 is detected as the last 4 inputs and a 0 otherwise.

A 4 input shift register is shown to start your design off.

(Circle correct answer)

Will Y ever be a 1 when Z is not a 1? **Y** N

Will Z ever be a 1 when Y is not a 1? Y **N**

