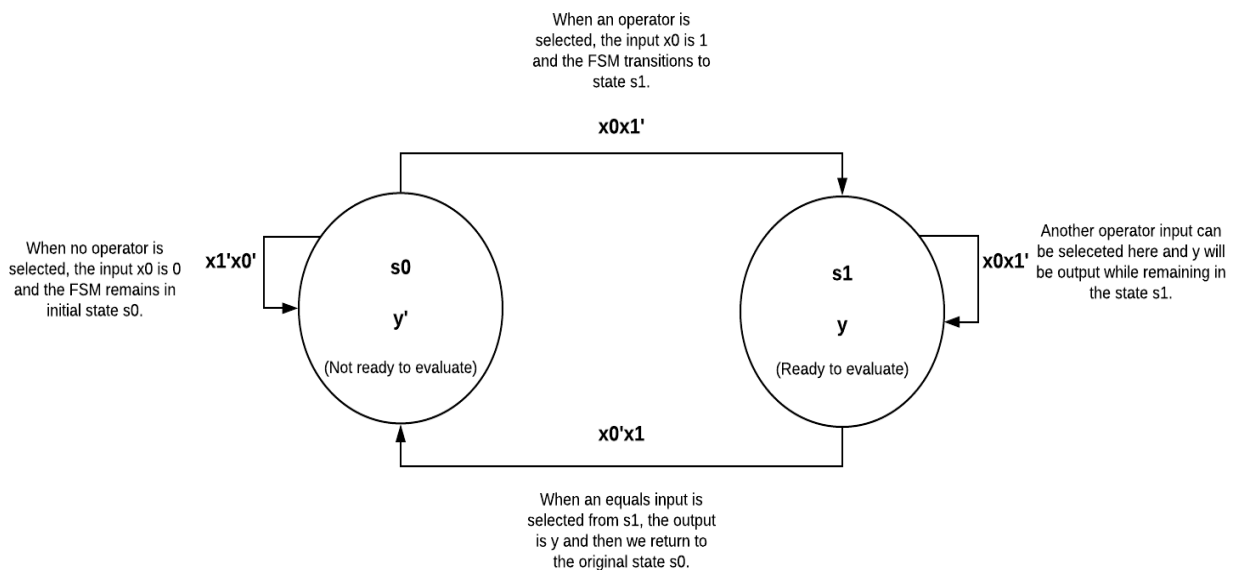Hillary Adams

Inputs: **x0** (any operation button), **x1** (the equals button), the current state

Outputs: **y** (the number shown when an operator is pressed or the result number when equals is pressed), the next state

S0: This state is the original state of the calculator ready to receive inputs. No signal is being output yet and we will remain here up until an operator is pressed.

S1: This state outputs a signal to eventually be used (when the input of any operator is selected) to save and display a number and operation or (when the input equals is selected) evaluate and display then return to the first state.

When an operator is selected, the input x0 is 1 and the FSM transitions to state s1.

x0x1'

When no operator is selected, the input x0 is 0 and the FSM remains in initial state s0.

x1'x0'

s0

y'

(Not ready to evaluate)

s1

y

(Ready to evaluate)

x0x1'

Another operator input can be seleceted here and y will be output while remaining in the state s1.

x0'x1

When an equals input is selected from s1, the output is y and then we return to the original state s0.

S	X0	X1	Y	N
0	0	0	0	0
0	0	1	0	0
0	1	0	1	1
0	1	1	Undefined?	
1	0	0	0	1
1	0	1	1	0
1	1	0	1	1
1	1	1	Undefined?	

N simplified

$$N = (s'x0x1' + sx0'x1' + sx0x1') = sx1' + s'x0x1'$$

$$Y = s'x0x1' + sx0'x1 + sx0x1'$$