

Design of Sequential Circuits I

Please do the following exercises individually.

Bit sequences

Please design a sequential circuit which finds three subsequent 0s in a bit stream.



A bit stream is a sequence of bits controlled by a clock signal.

Bit Stream	0	1	1	0	1	0
Read	↑	↑	↑	↑	↑	↑
Clock	□	□	□	□	□	□

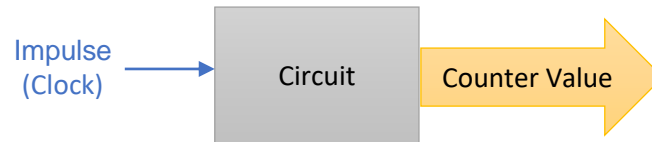
The circuit should read the input stream and output a 1 if pattern 000 is found.

Design of Sequential Circuits II

Please do the following exercises individually.

Counter

Please design a mod-6 counter.



A counter counts impulses. These impulses are produced by the events which should be counted. A person triggers for example a light barrier when he or she enters a room. We want to know how many persons entered the room.

Counters have a certain range. Most counters restart from 0 when an overflow occurs. So, if the range of a counter is 0 ... 5 the it counts 0, 1, 2, 3, 4, 5, 0, 1, Such a counter is called mod-6 counter.