

TD Series N°. 5 Combinatorial and Sequential Logic

Exercise 1

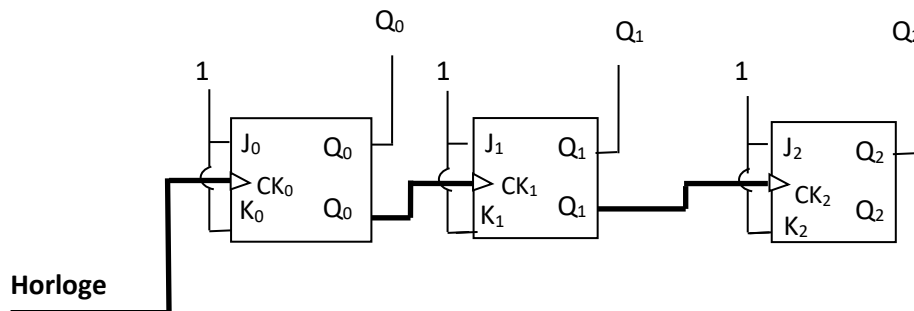
Determine the characteristic equations (simplified expressions of Q_{t+1}) of the JK, D, T and SR flip-flops.

Exercise 2

Determine the excitation (transition) tables of the JK, SR, D and T flip-flops.

Exercise 3

Consider the following circuit composed of positive edge JK flip-flops:



- 1- Is the circuit synchronous or asynchronous? Why?
- 2- Draw its chronogram with the initial state $Q_2Q_1Q_0 = 000$.
- 3- What is the use of this circuit?

Exercise 4

Let us consider an imaginary VW flip-flop defined by the following truth table:

V	W	Q_{t+1}
0	0	Q_t
0	1	0
1	0	1
1	1	Q_t

- Give the characteristic equation of the VW flip-flop.
- How can we transform SR flip-flop into a VW flip-flop?