

**Here are some examples of exercises you can expect in the exam.**

- Assume that an industrial system output is controlled by the following state update equation

$$X_{n+1} = X_n + U_n,$$

Where  $U$  is the signal provided by the sensor that monitors the process, and  $X_0 = 0$ ,  $U_0 = 0$ , and  $U_{n+1} = U_n + 1$ .

Let us assume that an attacker manages to break into the sensor at time 10 and controls signal  $U$  such that  $U_{n+1} = U_n + 5$ . Given that the system uses a non-parametric CUSUM statistics with a threshold 50, how many steps will it take to detect the attack (from the moment it begins)?

- Given the following bit series of a message in the CAN bus, complete the attacker's bit series such that it increases the TEC of the victim (notice that red boxes are for arbitration).

Victim	0	0	1	1	1	0	0	1
Attacker								