Sixth Homework of Concurrent Systems

Exercise 1 Draw the LTS of the following two processes:

$$P = (a.\bar{b} \mid b.(c + d)) \setminus_b \qquad\qquad Q = (a.\bar{b} \mid b.c \mid b.d) \setminus_b$$

Then, say if they are language equivalent (by considering all states as final) and/or strongly bisimilar. In both cases, justify your answer.

Exercise 2 Provide a bisimulation to show that

$$(a.b \mid \bar{a}.c) \setminus_a \quad \sim \quad \tau.(b \mid c)$$

Exercise 3 Consider the queue presented at the end of chapter 2 of the notes. Modify it to realize a stack of 2 bits. Then, say by words (no full code is required here) how your solution would change for a 3-bits stack.

Exercise 4 Show that the two implementations of the 2-bits queue given in the notes (the one with 7 equations – without parametric definitions – and the one with just 3 equations – with parametric definitions) yield isomorphic LTSs (i.e., LTSs that only differ in the process associated to the various states).