1. By constructing the refusal trees of the two behaviour expressions below, show that conformance is not a symmetric relation.

A = a; b; stop [] c; stop
B = i; a; stop [] b; c; stop

2. Given the behaviour expressions:

A = (a; (b; stop [] i; c; stop)) ||[a,c]|| (a; (i; b; stop [] c; stop))
B = (a; (b; stop [] c; stop)) ||[a, c]|| (a; (i; b; stop [] i; c; stop))

a) Are A and B weak bisimulation equivalent?
b) Does one of them conform to the other?
c) Are they trace equivalent?
d) Are they testing equivalent?

3. Construct the canonical tester of the following behaviour expression and derive the set of test cases:

(a; (b; stop [] c; stop)) ||[a,c,]|| (a; (i; b; stop [] c; stop))

4. By reference to the notes by Burstall, prove the following:

a) For all m, n,  m + succ(n) = succ (m+n)   [Proposition 5.2 on page 7]
b) For all l,  join(l,nil) = l                                  [first Lemma 6.1 on page 9]
c) Given the definition:
length : list(alpha) -> nat
length(nil) <= 0
length(n::l) <= length(l) + 1
Prove that:
length(join(k,l)) = length(k) + length(l)