

CSI 5109 Assignment 1

1. Given the behaviours expressions B1 to B4:

$B1 = a; b; \text{stop} \parallel c; b; \text{stop}$

$B2 = (a; \text{stop}) \parallel (i; b; \text{stop})$

$B3 = b; (c; \text{stop} \parallel a; \text{stop})$

$B4 = a; b; c; \text{stop}$

show the labeled transition systems corresponding to these behaviour expressions:

$E1 = B1 \parallel [b] B4$

$E2 = B2 \parallel f; \text{stop}$

$E3 = B4 [> B3$

$E4 = B3 \parallel B1$

$E5 = B2 \parallel B2$

2. Show the inferences rules applied to the behaviour

$B = ((a; c; \text{stop}) \parallel [e] (b; d; \text{stop})) [> ((e; d; \text{stop}) \parallel (c; d; \text{stop}))$
leading to execution trace $\langle a \ b \ c \ d \ \text{stop} \rangle$.

3. Elaborate the behaviour tree of the behaviour

$B = a; \text{stop} \parallel (b; c; \text{stop} [> d; \text{stop}) \parallel e; \text{stop}$

4. Given the behaviours

$B1 = (a; b; c; \text{stop} \parallel b; c; d; \text{stop}) \parallel [c] (b; c; d; \text{stop} \parallel c; a; d; \text{stop})$

$B2 = (a; b; c; \text{stop} [> c; d; \text{stop}) \parallel [c] (b; a; \text{stop} \parallel [b] c; b; \text{stop})$

find all (immediatly) applicable transitions $B_n - a_n \rightarrow B_{n'}$ (i.e. all possible "next events")