Tutorial 6

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1. The definition

$$A ::= a.\overline{b}.A + b'.\overline{a'}.A$$

defines a bidirectional buffer in CCS of size 1. Data can be written in one direction to a and then output to b, or data can be written in the opposite direction to b' and then output to a'.

- Show the sequence of transitions labelled by a and $\overline{b}$ for process A. State the semantic rules used in each step of the process. e.g. complete the following:

$$A \rightarrow^{a} ... \rightarrow^{\overline{b}} ...$$

2. Define the following processes for an ant colony system.

- An Ant that can continuously consume food.
- A $Queen$ that can continuously consume two food to produce a new ant
- A $Food$ process that can be consumed (food can only be consumed once). $Food$ processes can also decay (food can't be consumed once it has decayed)

e.g. complete the following definitions:

- $Ant ::= ...$
- $Queen ::= ...$
- $Food ::= ...$

Given your definitions, show a possible complete run for the process

$$Ant|Queen|Food|Food$$