Q 1: (5 points) Deadline - 11:59 pm on November 12, 2017

Consider the following protocol that ensures mutual exclusion among N processes using real-time clocks and a shared variable `lock`.

Initially `lock` is 0.

Every process follows the following process:

```
loop
    wait until lock = 0;
    wait for a delay <= δ1;
    set lock to process id;
    wait for a delay >= δ2;
    if lock = process id
        enter critical section;
    go back to the wait state
end
```

Model the protocol in UPPAAL and verify the *mutual exclusion* property for $N = \{2 \ldots 7\}$ processes. In each case consider the following:
(a) $\delta1 = 2$, $\delta2 = 3$
(b) $\delta1 = 3$, $\delta2 = 2$
Report the verification result with the time required for the verification.

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