Quiz II (10 pts)

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Assigned : April the 21st, 20h15
Duration : 60 minutes

Q1. (7 pts) Let $\alpha = wz(xyw)^*x$ and $\beta = wzx(ywx)^*$ be a pair of regular expressions defined over the alphabet $\Sigma = \{x, y, z, w\}$. Decide whether $\alpha \equiv \beta$ employing derivatives and bisimulation. Justify your reasoning.

Q2. (3 pts) Simplify the regular expression

$$\alpha := (x^\star y)^\star + \big(x^\star(yx^\star)z\big)^\star(x^\star y)^\star xx^\star + \varepsilon$$

defined over the alphabet $\Sigma = \{x, y, z\}$ as much as possible benefiting Kleene Algebra axioms and rules (A.1) – (A.17). Clearly show simplification steps.

Important Notice:

- Collaboration is strictly and positively prohibited; lowers your score to 0 if detected.
- Any submission after 60 minutes will NOT be accepted. Please beware and respect the deadline!
- All handwritten answers should somehow be scanned into a single pdf file, and only then submitted. Make sure that your handwriting is decent and readable.