Exercise on probability

Consider the following process P:

$$a.(b.0 \oplus_{1/2} c.0) + a.(\tau.b.0 + \tau.c.0)$$

Assume that a, b and c are pairwise different. P gives rise to the following transition graph:

- How may different schedulers we have for P?

- What is the probability that b will be executed, under the different schedulers?

Solution

- There are 3 different schedulers:

  - The scheduler σ_1, which selects the transition **I**,
  - the scheduler σ_2, which selects the transition **II** and then **III**,
  - the scheduler σ_3, which selects the transition **II** and then **IV**.

- The probability of performing b is

  - $1/2$ under σ_1,
  - 1 under σ_2,
  - 0 under σ_3.