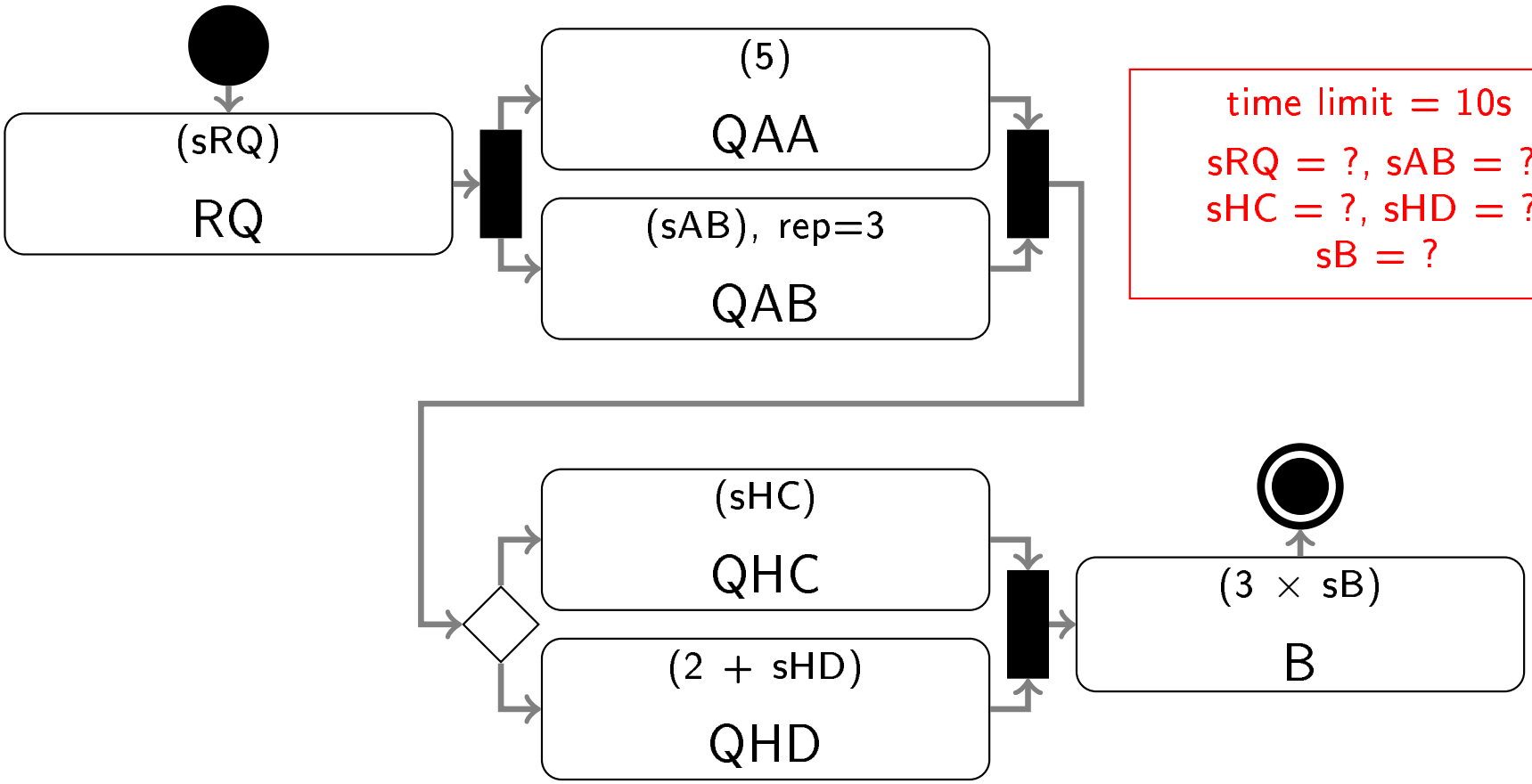
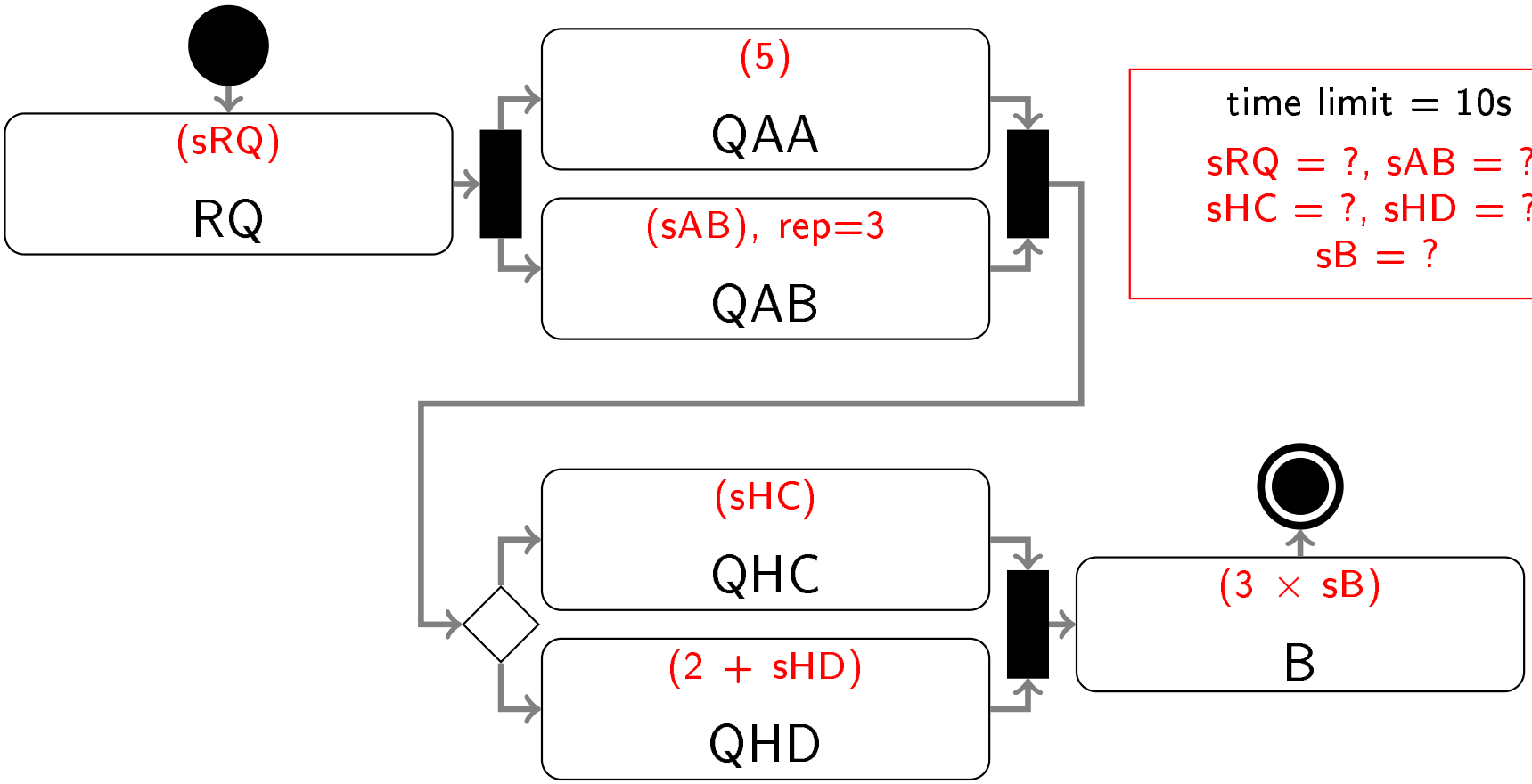
Exhaustive time limit inference

All paths from the initial node to the final nodes must finish within 10 seconds. We will infer the resulting time limits for each activity.



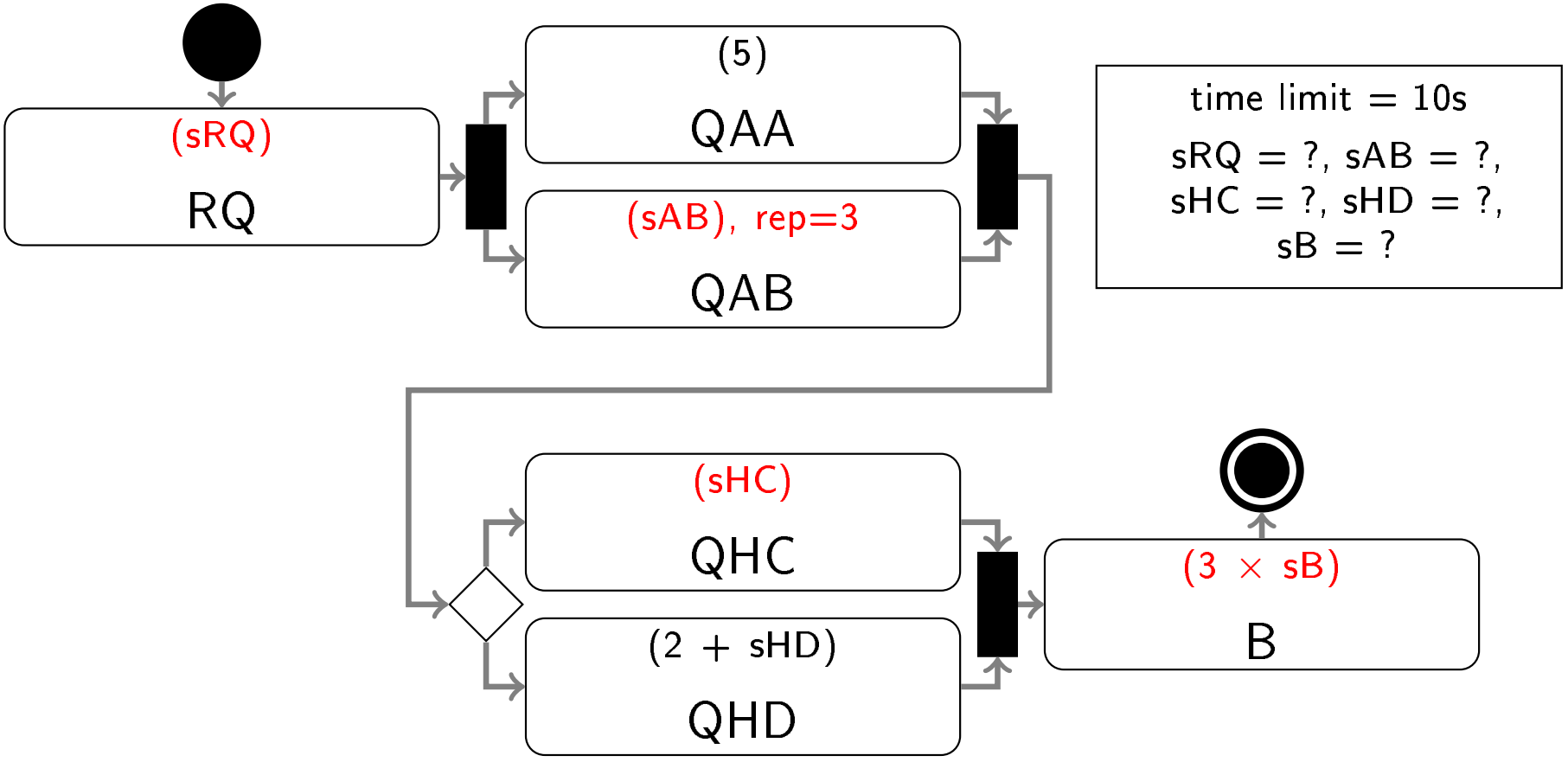
Exhaustive time limit inference

Activities are annotated with $m + wS$. m is the minimum time limit, w is the weight and S will be the computed slack per unit of weight. Some activities can be repeated.



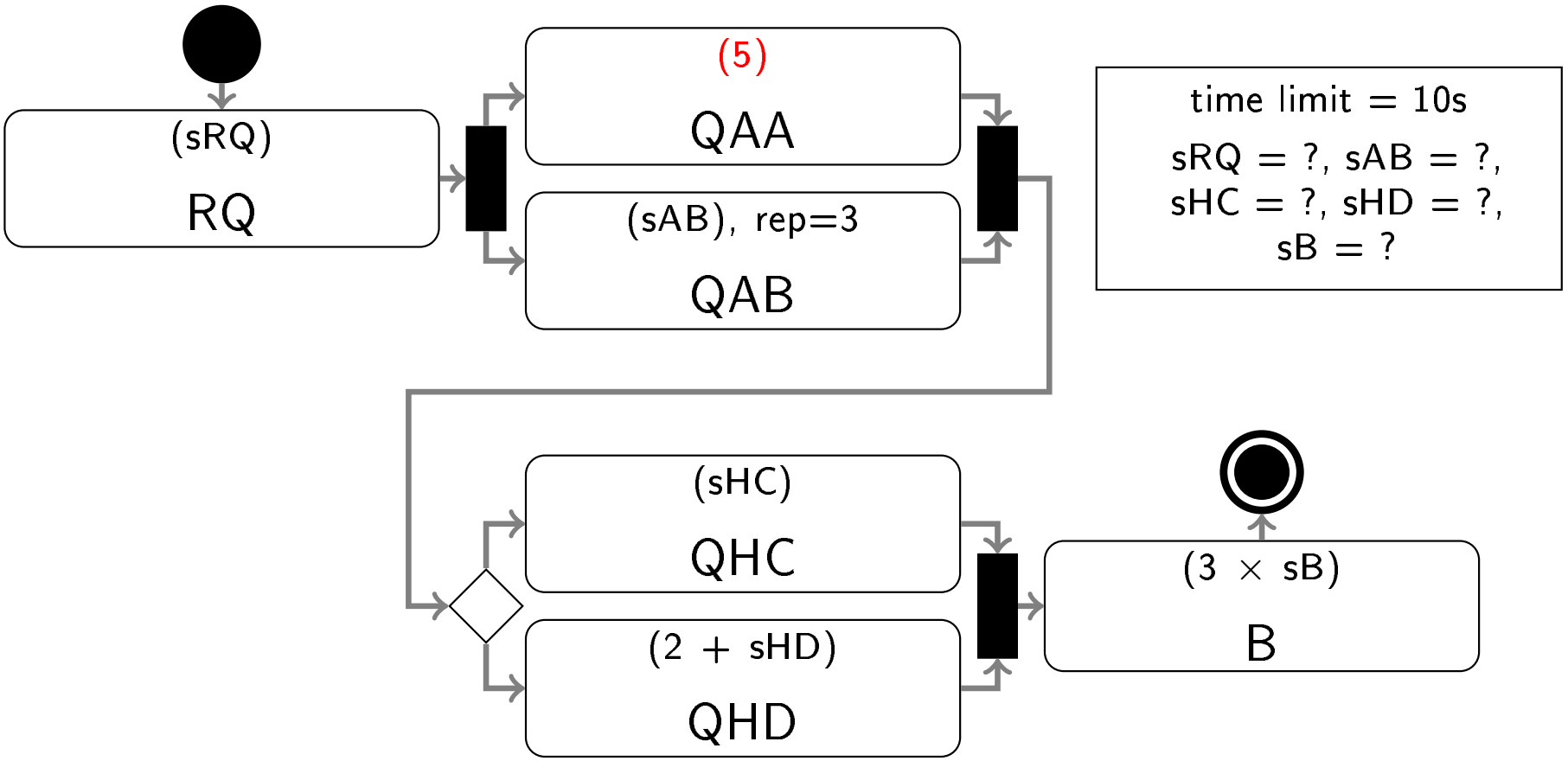
Exhaustive time limit inference

Most activities will have $m = 0$. w will be an estimation of their relative computational cost.



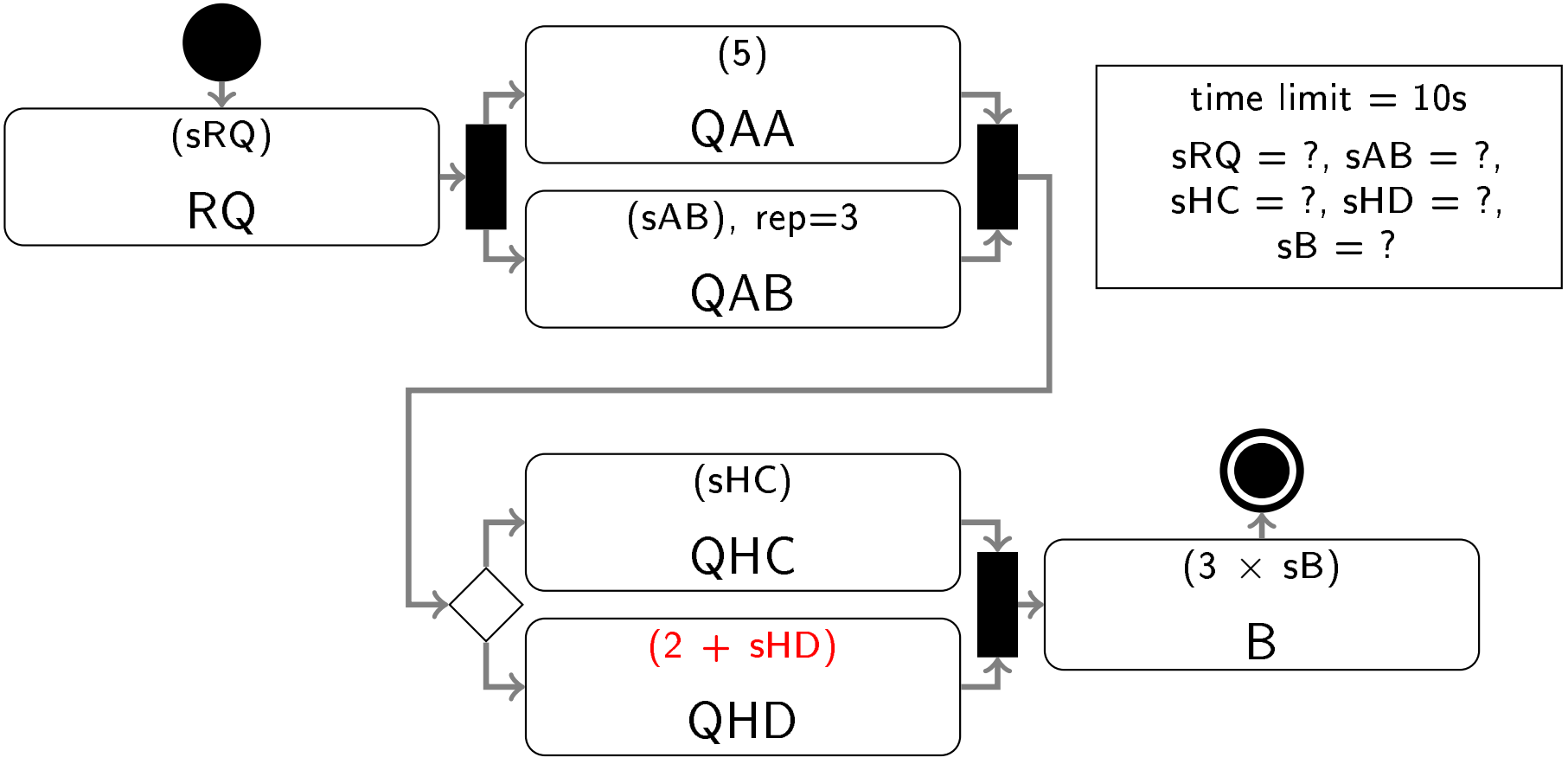
Exhaustive time limit inference

Other activities may have Service Level Agreements in place, with a previously agreed time limit.



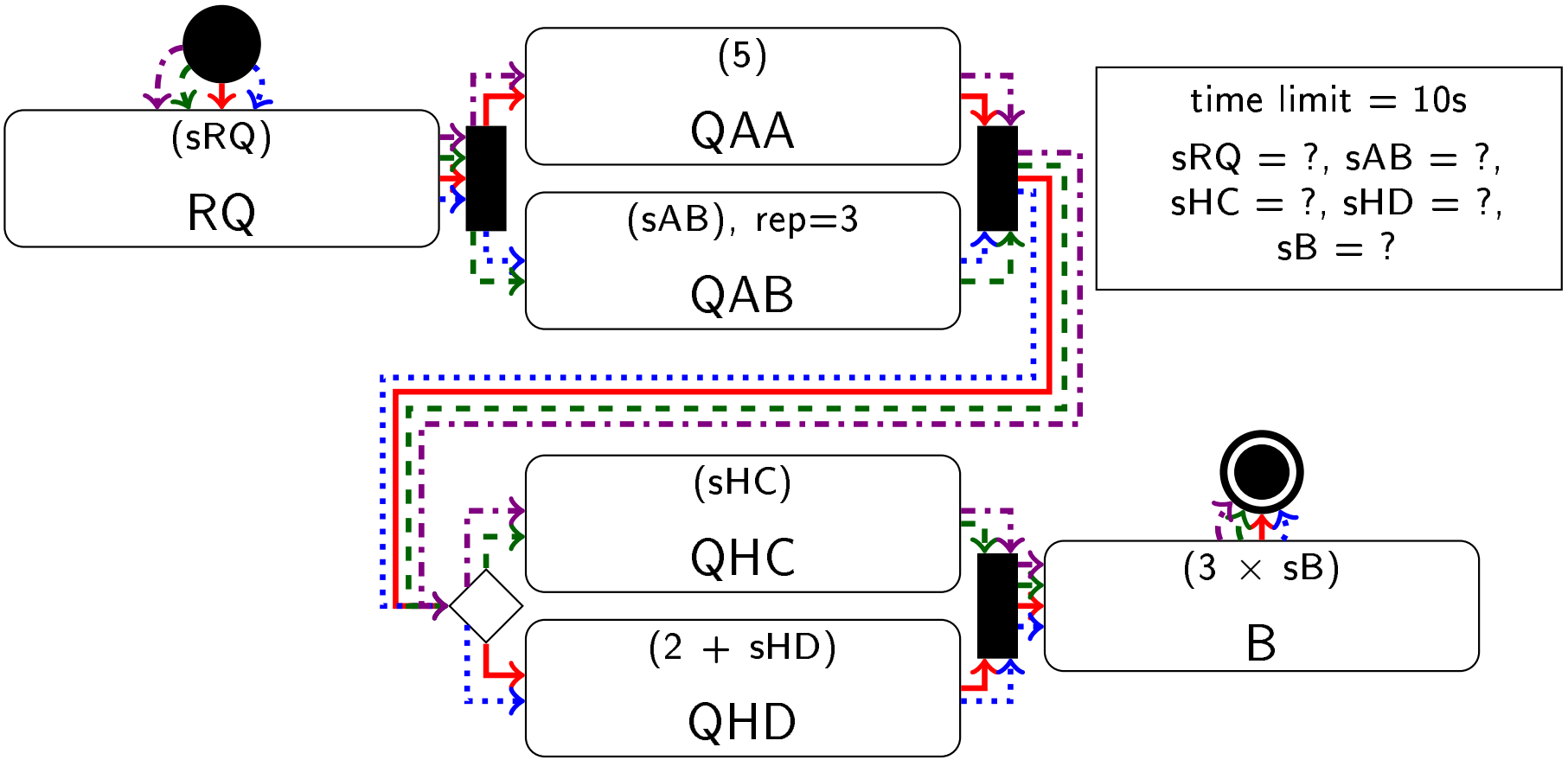
Exhaustive time limit inference

Finally, some activities may combine a fixed part with the variable part computed by the algorithm.



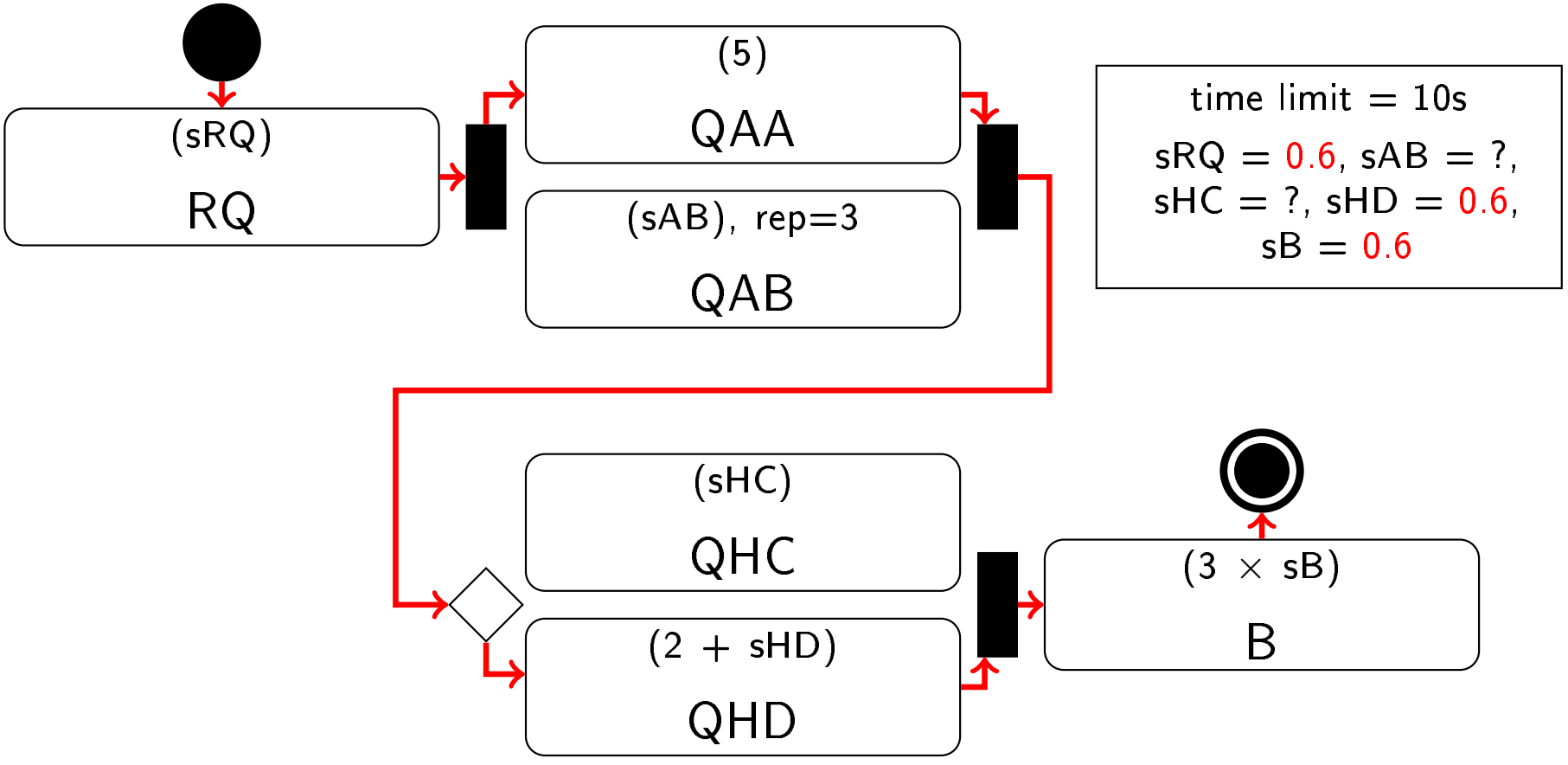
Exhaustive time limit inference

We find all paths from the initial node to the final node, adding up min times and weights into (m, w) pairs: red/solid (7, 5), purple/dashdotted (5, 5), blue/dotted (2, 8), and green/dashed (0, 8).



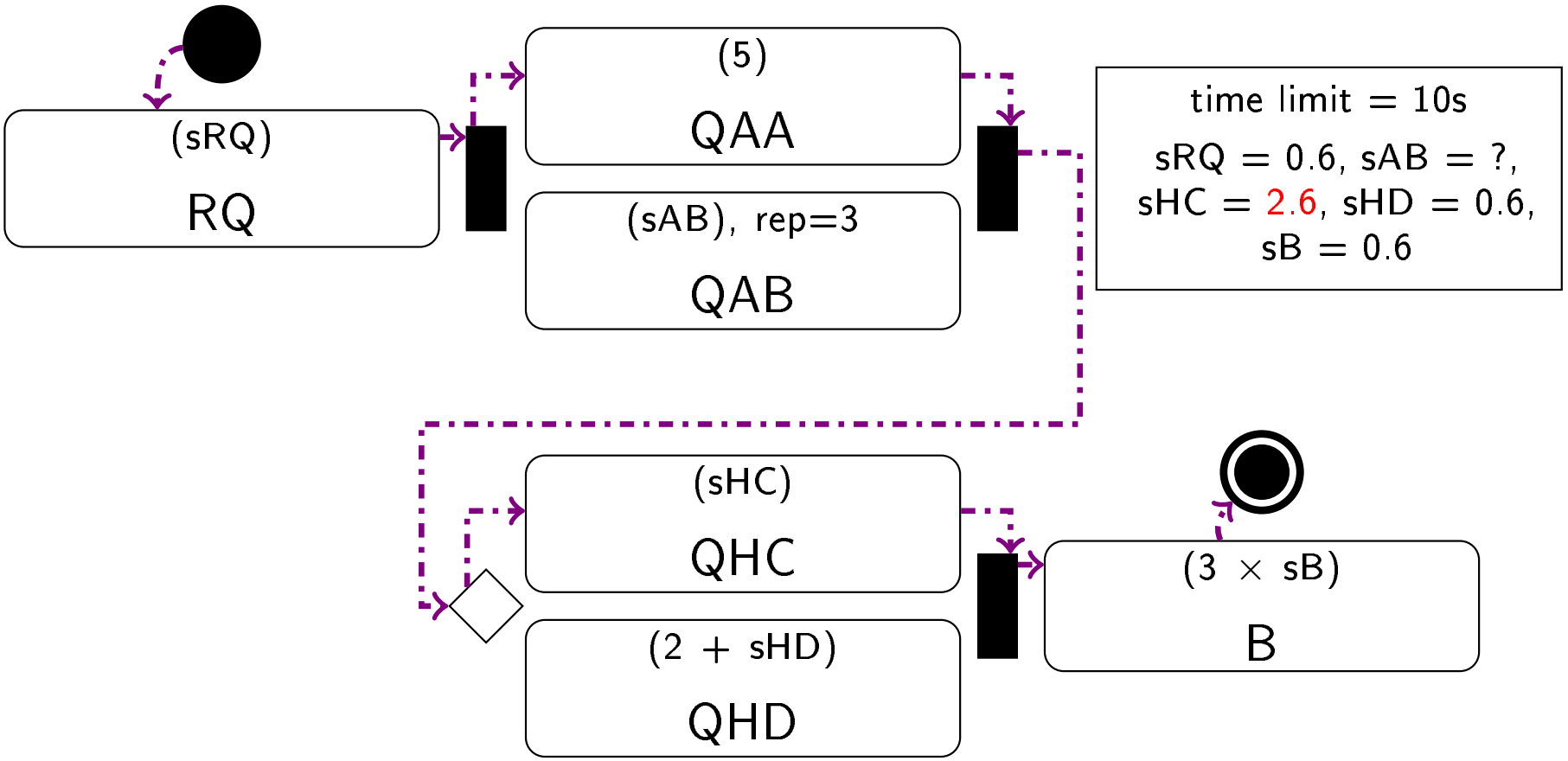
Exhaustive time limit inference

We start with (7, 5), leaving the least slack per unit of weight: $(10 - 7)/5 = 0.6$. RQ has 0.6s, QAA has 5s, QHD has 2.6s, and B has 1.8s.



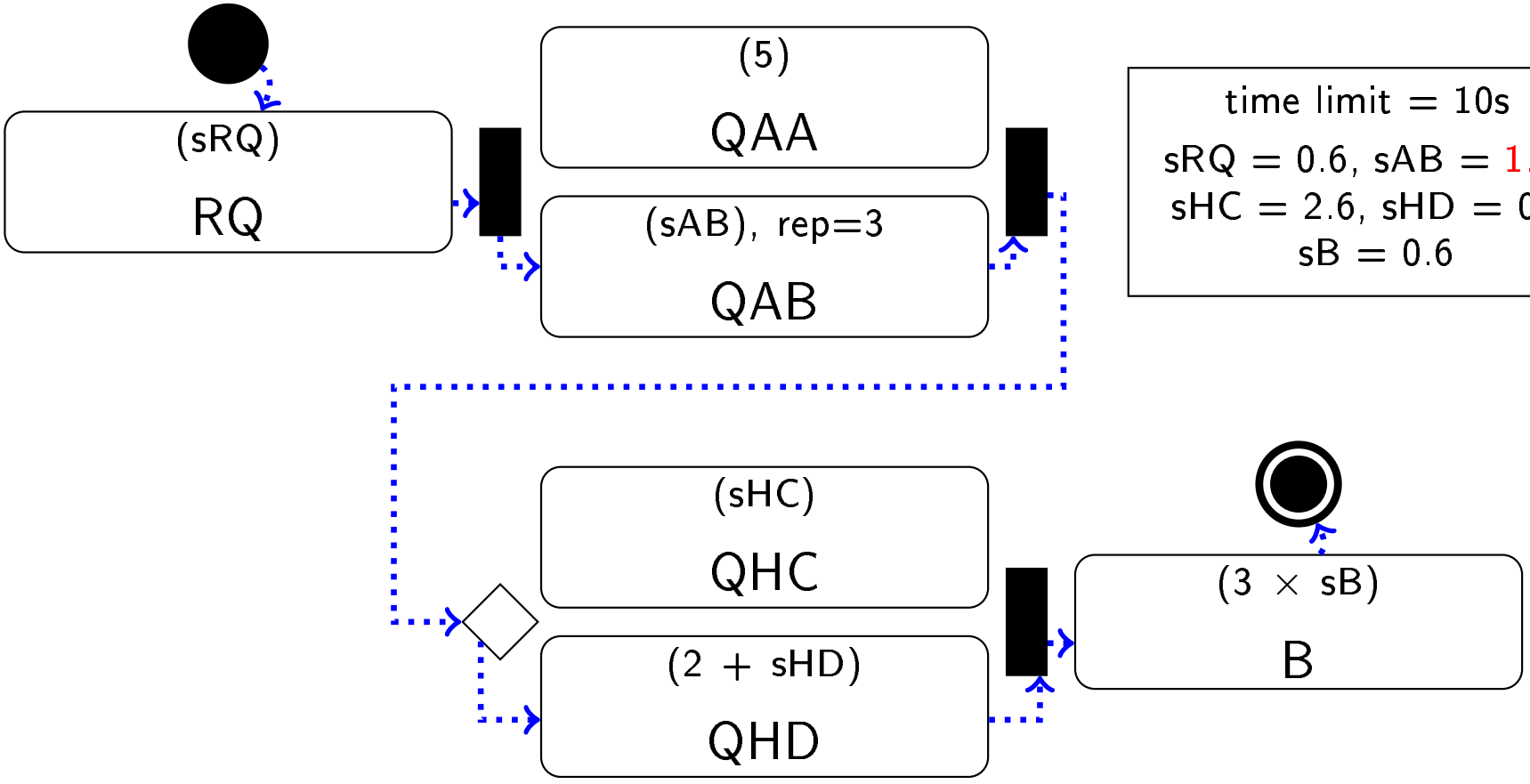
Exhaustive time limit inference

We continue with (5, 5): annotated nodes are "frozen" in place, leaving the slack per unit of weight for QHC to be $(10-7.4)/1 = 2.6$.



Exhaustive time limit inference

Next is (2, 8): QAB is given $(10-0.6-2.6-1.8)/3 = (10-5)/3 = 1.67$ of slack per unit of weight.



Exhaustive time limit inference

We have already annotated all nodes, so we do nothing for the fourth path. We are done!