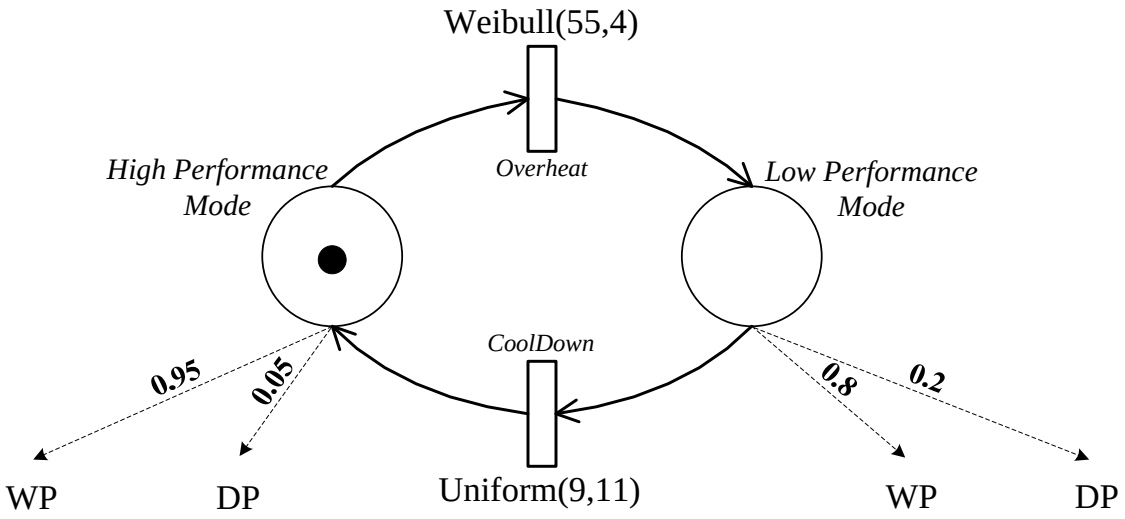
Lehrstuhl für Simulation

Applied Discrete Modelling

Assignment 6 “Machine Temperature”: HnMMs



System Specification

A machine’s behaviour is described by the above HnMM.
WP = Working Part, DP = Defective Part

Implementation

Extend your hard coded Proxel program with symbol outputs and path tracking

Tasks and Questions

Construct the state space and RG of the above model, including symbol emissions.
Write down the formal description of the above HnMM.

Use your program to answer the following questions:

- What is the probability of the given output sequence?
- What are the 5 most likely generating paths of that sequence?
- What are the actual portions of time spent in HPM in each of these paths?

We are not sure, what the exact specification of the machine behaviour is. We have several possible descriptions of the cooling down process Uniform(9,11), Exp(1/10), Normal(10,2).

- Compute the probability of each of the three resulting model descriptions.
- Which is the most likely cooling down behaviour of our machine, according to the given sequence?

- We have further production protocols from different days (2-5) representing observations from the same machine. Do these measurements support your decision for a specific behaviour?

Hint: You can compute the answers for different time step sizes, or pick one time step size and state reasons for your decision.