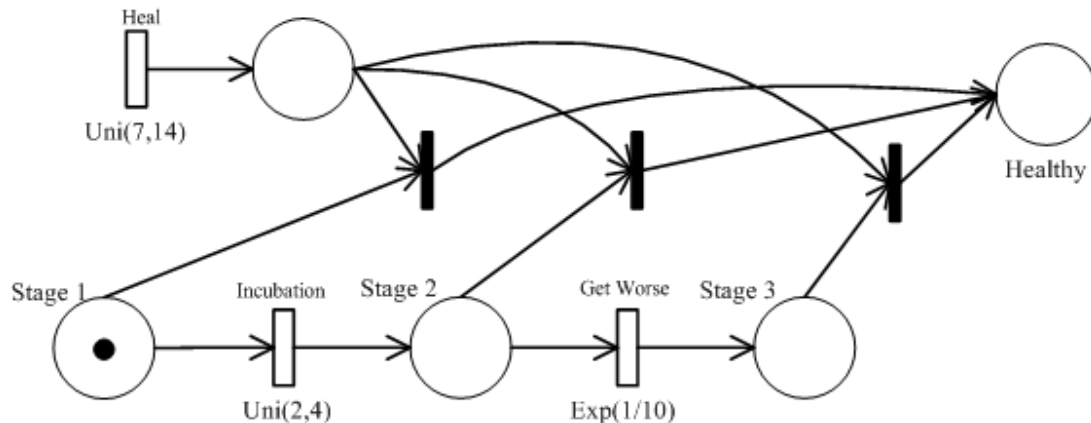


## Applied Discrete Modelling

### Assignment 4 “Diagnosis”: Proxel-based Simulation



#### System Specification

The development of a specific illness is described by the above GSPN.

We assume daily temperature measurements and the following probabilities for fever: in stage 1  $P(\text{fever}) = 0.1$ , in stage 2  $P(\text{fever}) = 0.5$ , in stage 3  $P(\text{fever}) = 0.8$ .

#### Implementation

Modify the given hard-coded Proxel-program to simulate the above Petri net.

#### Tasks and Questions

Construct the state space and RG of the above model.

Use your program to answer the following questions:

- What is the probability that the patient is still sick after 8 days for different discrete time steps (e.g. 2, 1, 0.5, 0.25, 0.1)?
- What is the probability of measuring fever on the 9<sup>th</sup> day for different discrete time steps (e.g. 2, 1, 0.5, 0.25, 0.1)?
- What is the expected duration until healing with probability 99% for different discrete time steps (e.g. 2, 1, 0.5, 0.25, 0.1)?