1 Description

There is a man. He can cook, eat, and play. Cooking makes food cooked. he can eat food if it is cooked. After eating he feels not hungry, and food is not cooked again. He can play. Playing makes him hungry. He just can play if he is not hungry. He just cooks when there is no food is cooked. Initially, the is hungry, and no food is cooked. In terms of energy, eating costs 5, cooking costs 15, playing costs 20.

2 Representation in language

Fluents: cooked, hungry.
Actions: cook, eat, play.

eat costs 5
cooking cost 15
play cost 20
initially ¬cooked ∧ hungry
cook causes cook if ¬cooked
eat causes (¬cooked ∧ ¬hungry) if cooked
play causes hungry if ¬hungry

3 Calculation

$\sum = \{\sigma 0\ ,\sigma 1,\ \sigma 2,\ \sigma 3\}$

$\sigma 0 = \{\neg\text{cooked, hungry}\}$
$\sigma 1 = \{\text{cooked, hungry}\}$
$\sigma 2 = \{\neg\text{cooked}, \neg\text{hungry}\}$
$\sigma 3 = \{\text{cooked}, \neg\text{hungry}\}$

$\psi(\text{eat}, \sigma 0) = \sigma 0$
$\psi(\text{cook}, \sigma 0) = \sigma 1$
$\psi(\text{play}, \sigma 0) = \sigma 0$

$\psi(\text{eat}, \sigma 1) = \sigma 2$
$\psi(\text{cook}, \sigma 1) = \sigma 1$
$\psi(\text{play}, \sigma 1) = \sigma 1$

$\psi(\text{eat}, \sigma 2) = \sigma 2$
$\psi(\text{cook}, \sigma 2) = \sigma 3$
$\psi(\text{play}, \sigma 2) = \sigma 1$

$\psi(\text{eat}, \sigma 3) = \sigma 2$
$\psi(\text{cook}, \sigma 3) = \sigma 3$

$\psi(\text{play}, \sigma 3) = \sigma 1$

4 Graph