~~buy compensate do nothing take~~

~~Bx = x buys insuline~~
~~Cxy : x compensate y~~
~~Nx = x does nothing~~
~~Txy = x take y's insulin~~

---

buy. compensate, do nothing, take || <I, M, A, W>

Bx : x buys insuline	Ix = x has insulin
xBy = x compensates y	Mx = x has money (nMx eg. $1Mx$)
Nx = x does nothing	Ax = x is alive (nAx eg $2Ax$)
xTy = x takes y's insuline	W = shops are open

~~Action | precondition | post-condition~~
~~buy — x is alive (A=1,2), x has money (M=1,2), insulin is 0~~

Action	Pre-conditions	Postconditions
buy	x is alive (A = 1,2) x has money (M = 1,2) shops are open (W = 1,2) x does not have insulin (I = 0)	alive is A+1 money is M-1 insuline is 1

+39 3200 715743

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* $(Ax \land Mx \land W \land \neg Ix) \to (\Diamond Bx) \lor Nx$

~~[illegible]~~

* $(1Ax \land \{1 \text{ vs } 2\}Mx \land W \land \neg Ix) \to (\Diamond Bx) \lor (\Diamond Nx)$

$Bx \to (2Ax \land n\text{-}1Mx, Ix)$

~~$\neg Bx$~~ $[(Nx \land 1Ax \land \neg Ix) \to \neg Ix]$

Action — Compensate

Preconditions

x is alive ($A = \{2\}$)
x has money ($M = \{1 \vee 2\}$)
x has insulin ($I = 1$)
$w = \_$

Postconditions

$Mx = n\text{-}1\,Mx$

(C)

$(\{2\}Ax \wedge \{1 \vee 2\}Mx \wedge Ix) \rightarrow xC_y$

$xC_y \rightarrow n\text{-}1Mx$

Action — do nothing

Preconditions

all valid states!
$I = \_$
$M = \_$
$A = \_$
$w = \_$

Postcondition

$\neg Ax$ if x does not have insulin
no changes otherwise

$Ix \wedge nMx \wedge nAx \wedge (w \vee \neg w) \rightarrow Nx$

$\neg Ix \wedge nAx \wedge Nx \rightarrow \neg Ax$

Action	Preconditions	Post conditions
take	x does not have Insulin x is alive (1) K = _ ω = _	x has insulin x is alive 2 K = _ ω = _

$(\exists y) \wedge \neg Ix \wedge 1Ax \rightarrow yTx$ (given Iy!)

$yTx \rightarrow Ix \wedge 2Ax \wedge \neg Iy$

$[\text{bad}(\text{Insulin}) \wedge \text{fbad}(\text{Kores}) \wedge \text{fbad}(\text{Alive}) \wedge \text{bad}(\text{world})] \rightarrow$

$\rightarrow$

S(Insulin, Kores, Alive, world) is a valid state).

$[Vs(p) \wedge Ay] \rightarrow \cdot\, gS_{o}(p)$

Action	Preconditions	Post conditions
take	x is alive (1) x does not have insulin (2) y has insulin (1) K = ω =	x is alive (2) x has insulin y does not have insulin K _ ω _

$(1Ax \wedge \neg Ix \wedge Iy) \rightarrow yTx$

Postcondition (as transition)

~~[illegible]~~

~~[illegible]~~

if Bx from state S then ->

s(0, 2, 1, 1) — buy — s(0, 1, 1, 1)

s(0, 1, 1, 1) — buy — s(0, 0, 1, 1)

~~Stag~~ path-length 1

~~Bx ∧ Stg(Ag~~

~~Bx ∧~~

Can-buy (Ag, fruit) ~~[illegible]~~ ->

~~Can~~

~~[illegible]~~

Bx -> (Ix ∧ x-1Mx ∧ zAx ∧ w)

Ix[insulin(StateF, 1),
money(StateF, 2),
alive(StateF, N),
shops(StateF, _)] :-