

Example of parking system implemented with RIPN

<https://github.com/ppalma00/RIPN>

We provide an example to demonstrate the utility of the proposed tool. The example implements a smart parking system designed to minimize cabin temperatures in vehicles and reduce energy consumption by assigning parking slots based on sun exposure forecasts and estimated departure times. Depending on sensor availability, recommendations can range from specific slot suggestions to broader area guidance.

A TR program governs each vehicle's behavior, aiming to park in an optimal slot while handling high-demand situations and reducing search times. It continuously evaluates prioritized rules using the context stored in a shared BeliefStore. Initially, the vehicle announces its arrival by sending the *new_car* event. If assigned a slot, it proceeds to park; otherwise, it either waits for an available slot with favorable conditions or exits the parking zone in case of high demand and no availability. Once parked, the vehicle sends the parked event back to the system.

The Petri net handles the parking facility's control logic. Upon receiving *new_car*, it manages barrier opening and updates the count of waiting vehicles (*NWaiting*). High demand is tracked by comparing *NWaiting* to a configurable *limit*. Slot assignment considers low-temperature predictions, starting actions like *keepopen&illuminated* and timers to ensure timely parking maneuvers. If the timer expires without parking completion, the system resets, freeing the slot. Vehicle exits are also managed via events like *exitzone*, triggering the exit barrier and updating the system state.

Both the RIPN and TR programs operate on a shared BeliefStore containing facts such as *high_demand*, *free(slot)*, and *low_temp(slot)*. This integration ensures consistent context awareness and coordination between vehicle decisions and parking management.

PETRI NET SPEC

FACTS: high_demand; waiting(INT); free(INT); low_temp(INT); assigned(INT,INT);
parked(INT, INT)

VARINT: NWaiting; limit; c; s

VARREAL:

INIT: NWaiting:=0; limit:=100; low_temp(10); low_temp(20); free(10)

DISCRETE: open_exit_barrier(); open_entrance_barrier()

DURATIVE: keepopenilluminated()

TIMERS: timer2

PLACES: p0; p1; p2; p3; p4; p5

TRANSITIONS: t0; t1; t2; t3; t4; t5; t6; t7; t8; t9

ARCS: p0->t1; p0->t2; t1->p1; t2->p1; p1->t3; p1->t4; p1->t5; t3->p3; t4->p2;

ARCS: t5->p5; p3->t0; t0->p4; p4->t8; t8->p0

ARCS: p2->t6; t6->p1; p2->t7; t7->p3; p5->t9; t9->p3

INITMARKING: (0,0,0,1,0,0)

EVENTS: new_car(0, INT); parked(0, INT, INT); exitzone(0, INT)

<PN>

t0: when(new_car(c)) [c:=c]

p4: [open_entrance_barrier()]

p0: [NWaiting:=NWaiting +1]

t1: [remember(high_demand)] if(NWaiting >= limit)

t2: [forget(high_demand)] if(NWaiting < limit)

p1: [remember(waiting(c))]

t3: when (parked(c,s)) [forget(waiting(c)); forget(free(s))]

t6: [remember(free(s)); forget(assigned(c,s)); forget(timer2.end)] if(timer2.end)

t4: [forget(waiting(c))] if(free(out s) && low_temp(s))

t5: when(exitzone(c)) [NWaiting:=NWaiting-1; forget(waiting(c))]

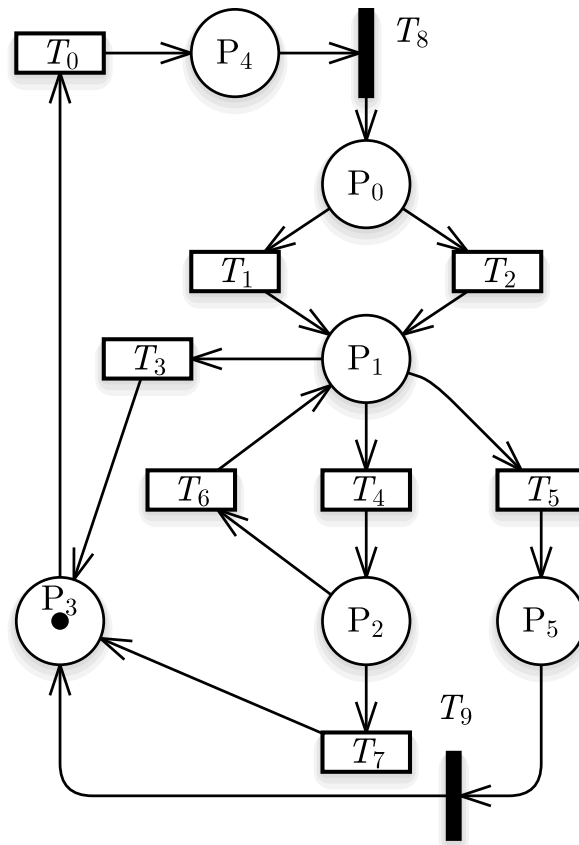
p5: [open_exit_barrier()]

t7: when(parked(c,s)) [forget(assigned(c,s)); remember(parked(c,s));

NWaiting:=NWaiting-1]

p2: [keepopenilluminated(); forget(free(s)); remember(assigned(c,s));

timer2.start(300)]



TR PROGRAM

FACTS:

PERCEPTS: free(INT); assigned(INT, INT); high_demand; already_parked

VARSINT: id; slot

VARSREAL:

DISCRETE:

DURATIVE: park(INT); exiting_zone()

TIMERS: timer1

INIT: id:=9

<TR>

already_parked -> _send("parked", id, slot)

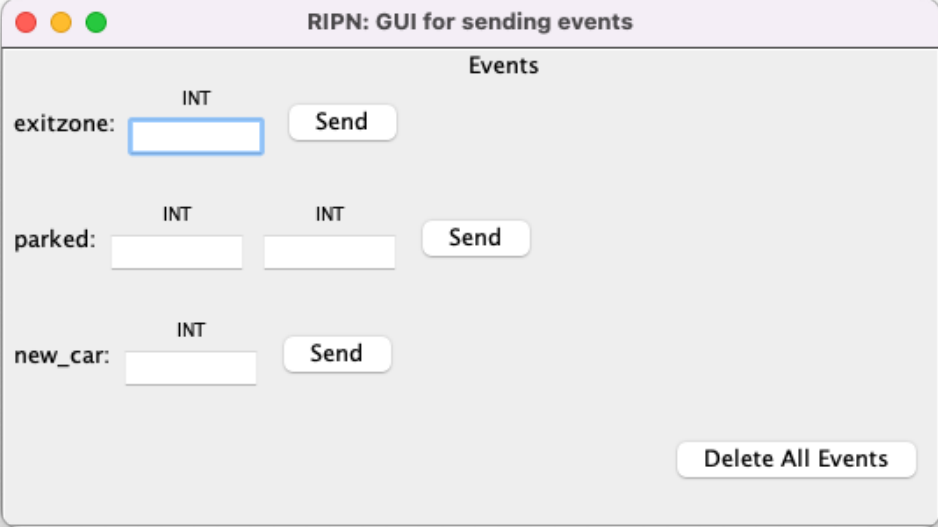
assigned(id, out slot) -> park(slot)

free(out slot) && timer1.end -> park(slot)

high_demand && !free(_) -> exiting_zone()

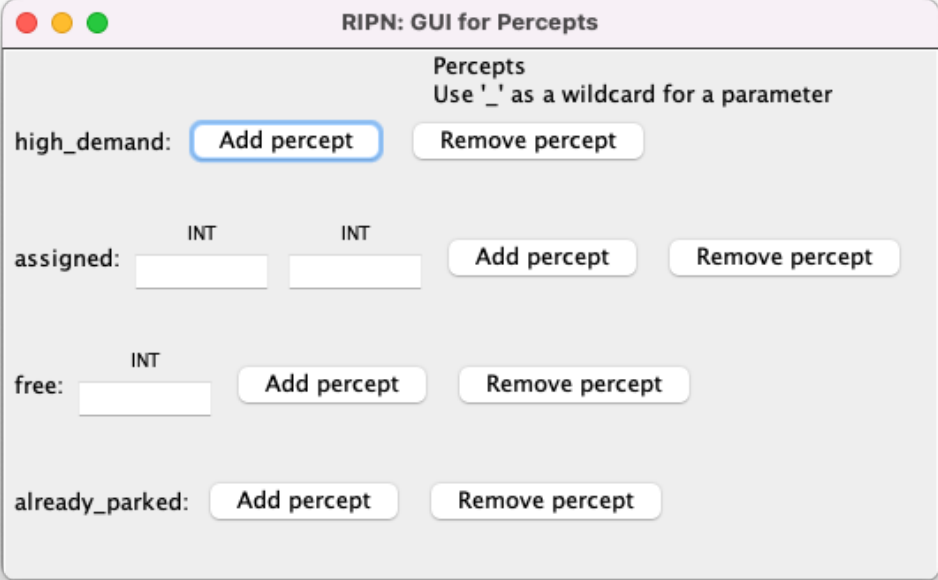
true -> _send("new_car", id); timer1.start(600)

The following GUI is showed to emulated the entry of events from the environment for the Petri net:



A macOS-style window titled "RIPN: GUI for sending events". The window has a light gray background and a title bar with red, yellow, and green window control buttons. The main content area is titled "Events". It contains three rows of input fields and buttons. The first row is labeled "exitzone:" followed by an "INT" type input field (a white box with a blue border) and a "Send" button. The second row is labeled "parked:" followed by two "INT" type input fields and a "Send" button. The third row is labeled "new_car:" followed by an "INT" type input field and a "Send" button. In the bottom right corner, there is a button labeled "Delete All Events".

The following GUI is showed to manage the percepts on the BeliefStore for the TR program:



A macOS-style window titled "RIPN: GUI for Percepts". The window has a light gray background and a title bar with red, yellow, and green window control buttons. The main content area is titled "Percepts" with a subtitle "Use '_' as a wildcard for a parameter". It contains four rows of input fields and buttons. The first row is labeled "high_demand:" followed by an "Add percept" button (highlighted with a blue border) and a "Remove percept" button. The second row is labeled "assigned:" followed by two "INT" type input fields, an "Add percept" button, and a "Remove percept" button. The third row is labeled "free:" followed by an "INT" type input field, an "Add percept" button, and a "Remove percept" button. The fourth row is labeled "already_parked:" followed by an "Add percept" button and a "Remove percept" button.

FIRST SCENARIO

The sequence of inputs is the following (through the GUI showed below):

1. **new_car(9)** is sent from the TR program to the Petri net at the beginning of the execution.
2. The percept **already_parked** is added to the BeliefStore to be used by the TR program. This triggers the sending of the event parked to the Petri net so transition "t7" is fired and the system returns to the marking of place "p3". The percept **already_parked** is then removed through the GUI so the TR program starts again its cycle.
3. This time the transition "t5" is fired as the event **exitzone** is received from the GUI (emulating a sensor). The action **open_discrete_barrier** is executed and the system returns to the initial marking on "p3".

Console

...started Petri net.

...started TR program.

[2025-07-03 11:27:02.299] Observer: Executing discrete action:

open_entrance_barrier with parameters: []

[2025-07-03 11:27:04.301] Observer: Executing discrete action:

keepopenilluminated with parameters: []

[2025-07-03 11:27:08.337] Observer: Starting durative action: park(slot) with parameters: [10.0]

[2025-07-03 11:27:15.359] Observer: Stopping durative action: park(slot)

[2025-07-03 11:27:16.338] Observer: Stopping durative action: keepopenilluminated

[2025-07-03 11:27:24.358] Observer: Executing discrete action:

open_entrance_barrier with parameters: []

[2025-07-03 11:27:44.399] Observer: Executing discrete action: open_exit_barrier with parameters: []

LOG_BS

 Initialized integer variable 'NWaiting' to 0

 Initialized integer variable 'limit' to 0

 Initialized integer variable 'c' to 0

 Initialized integer variable 's' to 0

 Initialized integer variable 'id' to 0

 Initialized integer variable 'slot' to 0

[2025-07-03 11:27:00.016]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=0, c=0, s=0, limit=100, id=9, slot=0}

Real variables: {}

[2025-07-03 11:27:00.300] ⌚ Timer started: timer1 for 600 seconds

[2025-07-03 11:27:01.300]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=0, c=0, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:02.300]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:04.303]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:06.309]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {waiting=[[9]], low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:08.319] ⌚ Timer started: timer2 for 300 seconds

[2025-07-03 11:27:08.320]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {assigned=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:15.357]

◆ Current BeliefStore state:

Active facts without parameters: [already_parked]

Active facts with parameters: {assigned=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:16.338]

◆ Current BeliefStore state:

Active facts without parameters: [already_parked]

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

🗑 Fact removed: already_parked

[2025-07-03 11:27:22.384]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:22.387] ⌚ Timer started: timer1 for 600 seconds

[2025-07-03 11:27:26.362]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:28.367]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], waiting=[[9]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:27:44.399]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

LOG_EVENTS

[LOG STARTED] 2025-07-03 11:26:59.996

[2025-07-03 11:27:00.298] Event added: new_car

Active Events:

new_car [9.0] expires in 9223370285319955508 ms

Unattended Events:

[2025-07-03 11:27:02.299] Event consumed: new_car with parameters [9.0]

Active Events:

Unattended Events:

[2025-07-03 11:27:15.360] Event added: parked

Active Events:

parked [9.0, 10.0] expires in 9223370285319940447 ms

Unattended Events:

[2025-07-03 11:27:16.337] Event consumed: parked with parameters [9.0, 10.0]

Active Events:

Unattended Events:

[2025-07-03 11:27:22.386] Event added: new_car

Active Events:

new_car [9.0] expires in 9223370285319933421 ms

Unattended Events:

[2025-07-03 11:27:24.357] Event consumed: new_car with parameters [9.0]

Active Events:

Unattended Events:

[2025-07-03 11:27:42.827] Event added: exitzone

Active Events:

exitzone [9.0] expires in 9223370285319912980 ms

Unattended Events:

[2025-07-03 11:27:44.398] Event consumed: exitzone with parameters [9.0]

Active Events:

Unattended Events:

LOG_PN

[2025-07-03 11:27:00.015] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ●

p4: ○

p5: ○

[2025-07-03 11:27:00.275] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ●

p4: ○

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:27:02.299] 🔥 Transition fired: t0

[2025-07-03 11:27:02.300] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ○

p4: ●

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:27:04.302] 🔥 Transition fired: t8

[2025-07-03 11:27:04.303] Current state of the Petri Net:

p0: ●

p1: ○

p2: ○

p3: ○

p4: ○

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:27:06.308] 🔥 Transition fired: t2

[2025-07-03 11:27:06.309] Current state of the Petri Net:

p0: ○

p1: ●

p2: ○

p3: ○

p4: ○

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:27:08.318] 🔥 Transition fired: t4

[2025-07-03 11:27:08.319] Current state of the Petri Net:

p0: ○

p1: ○

p2: ●

p3: ○

p4: ○

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:27:16.338] 🔥 Transition fired: t7

[2025-07-03 11:27:16.338] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ●

p4: ○

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:27:24.358] 🔥 Transition fired: t0

[2025-07-03 11:27:24.358] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ○

p4: ●

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:27:26.361] 🔥 Transition fired: t8

[2025-07-03 11:27:26.362] Current state of the Petri Net:

p0: ●

p1: ○

p2: ○

p3: ○

p4: ○

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:27:28.366] 🔥 Transition fired: t2

[2025-07-03 11:27:28.367] Current state of the Petri Net:

p0: ○

p1: ●

p2: ○

p3: ○

p4: ○

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:27:44.399] 🔥 Transition fired: t5
[2025-07-03 11:27:44.399] Current state of the Petri Net:
p0: ○
p1: ○
p2: ○
p3: ○
p4: ○
p5: ●
🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)
🚫 Transition 't6' blocked by condition: timer2.end
🚫 Transition 't1' blocked by condition: NWaiting >= limit
[2025-07-03 11:27:46.405] 🔥 Transition fired: t9
[2025-07-03 11:27:46.406] Current state of the Petri Net:
p0: ○
p1: ○
p2: ○
p3: ●
p4: ○
p5: ○
🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)
🚫 Transition 't6' blocked by condition: timer2.end
🚫 Transition 't1' blocked by condition: NWaiting >= limit
⏸ No non-immediate transitions enabled at this time. Waiting...

LOG_TR

[2025-07-03 11:27:00.273] Initiating TR program...
[2025-07-03 11:27:00.290] 🔄 Executing rule with condition: true
[2025-07-03 11:27:00.299] 📡 Event sent to environment: new_car[9.0]
[2025-07-03 11:27:00.300] ⚙️ Extracted timer command: start for timer: timer1
[2025-07-03 11:27:08.336] 🔄 Executing rule with condition: assigned(id, out slot)
[2025-07-03 11:27:08.336] ⌚ Starting durative action: park(slot)
[2025-07-03 11:27:15.359] ✅ Stopping durative action: park(slot)
[2025-07-03 11:27:15.359] 🔄 Executing rule with condition: already_parked
[2025-07-03 11:27:15.360] 📡 Event sent to environment: parked[9.0, 10.0]
[2025-07-03 11:27:22.386] 🔄 Executing rule with condition: true
[2025-07-03 11:27:22.386] 📡 Event sent to environment: new_car[9.0]
[2025-07-03 11:27:22.387] ⚙️ Extracted timer command: start for timer: timer1

SECOND SCENARIO

The sequence of inputs is the following (through the GUI showed below):

1. **new_car(9)** is sent from the TR program to the Petri net at the beginning of the execution.
2. The percept **already_parked** is added to the BeliefStore to be used by the TR program. This triggers the sending of the event parked to the Petri net so transition "t7" is fired and the system returns to the marking of place "p3". The percept **already_parked** is then removed through the GUI so the TR program starts again its cycle.
3. Bu using the GUI, the percept **high_demand** is added to the BeliefStore and all the occurrences of free are being removed (using the '_' wildcard).
4. The TR program executes the rule with condition "high_demand && !free(_)", exiting the parking zone.
5. The user inputs the event **exitzone** (emulating a sensor) and then transition "t5" is fired and the action **open_exit_barrier** executed, starting the cycle again.

Console

...started Petri net.

...started TR program.

[2025-07-03 11:51:25.887] Observer: Executing discrete action:

open_entrance_barrier with parameters: []

[2025-07-03 11:51:31.906] Observer: Starting durative action:

keepopenilluminated with parameters: []

[2025-07-03 11:51:31.912] Observer: Starting durative action: park(slot) with parameters: [10.0]

[2025-07-03 11:51:39.937] Observer: Stopping durative action: park(slot)

[2025-07-03 11:51:41.926] Observer: Stopping durative action: keepopenilluminated

[2025-07-03 11:51:51.940] Observer: Executing discrete action:


open_entrance_barrier with parameters: []


[2025-07-03 11:52:01.016] Observer: Starting durative action: exiting_zone() with parameters: []

[2025-07-03 11:52:07.970] Observer: Executing discrete action: open_exit_barrier with parameters: []

LOG_BS

 Initialized integer variable 'NWaiting' to 0

 Initialized integer variable 'limit' to 0

 Initialized integer variable 'c' to 0

 Initialized integer variable 's' to 0

 Initialized integer variable 'id' to 0

 Initialized integer variable 'slot' to 0

[2025-07-03 11:51:23.685]


◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=0, c=0, s=0, limit=100, id=9, slot=0}

Real variables: {}

[2025-07-03 11:51:23.884]  Timer started: timer1 for 600 seconds

[2025-07-03 11:51:24.884]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=0, c=0, s=10, limit=100, id=9, slot=0}

Real variables: {}

[2025-07-03 11:51:25.888]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:27.893]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:29.897]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {waiting=[[9]], low_temp=[[10], [20]], free=[[10]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:31.906]  Timer started: timer2 for 300 seconds

[2025-07-03 11:51:31.906]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {assigned=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:35.914] ⌚ Timer started: timer2 for 300 seconds

[2025-07-03 11:51:39.936]

◆ Current BeliefStore state:

Active facts without parameters: [already_parked]

Active facts with parameters: {assigned=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:41.926]

◆ Current BeliefStore state:

Active facts without parameters: [already_parked]

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

🗑 Fact removed: already_parked

[2025-07-03 11:51:50.979]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:50.981] ⌚ Timer started: timer1 for 600 seconds

[2025-07-03 11:51:53.947]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:55.954]

◆ Current BeliefStore state:

Active facts without parameters: []

Active facts with parameters: {parked=[[9, 10]], waiting=[[9]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:51:59.166] 🔍 Calling removeFactWithWildcard with: free(_)

[2025-07-03 11:52:01.015]

◆ Current BeliefStore state:

Active facts without parameters: [high_demand]

Active facts with parameters: {parked=[[9, 10]], waiting=[[9]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=1, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

[2025-07-03 11:52:07.970]

◆ Current BeliefStore state:

Active facts without parameters: [high_demand]

Active facts with parameters: {parked=[[9, 10]], low_temp=[[10], [20]], }

Integer variables: {NWaiting=0, c=9, s=10, limit=100, id=9, slot=10}

Real variables: {}

LOG_EVENTS

[LOG STARTED] 2025-07-03 11:51:23.671

[2025-07-03 11:51:23.882] Event added: new_car

Active Events:

new_car [9.0] expires in 9223370285318491924 ms

Unattended Events:

[2025-07-03 11:51:25.887] Event consumed: new_car with parameters [9.0]

Active Events:

Unattended Events:

[2025-07-03 11:51:39.939] Event added: parked

Active Events:

parked [9.0, 10.0] expires in 9223370285318475868 ms

Unattended Events:

[2025-07-03 11:51:41.925] Event consumed: parked with parameters [9.0, 10.0]

Active Events:

Unattended Events:

[2025-07-03 11:51:50.980] Event added: new_car

Active Events:

new_car [9.0] expires in 9223370285318464826 ms

Unattended Events:

[2025-07-03 11:51:51.939] Event consumed: new_car with parameters [9.0]

Active Events:

Unattended Events:

[2025-07-03 11:52:06.058] Event added: exitzone

Active Events:

exitzone [9.0] expires in 9223370285318449749 ms

Unattended Events:

[2025-07-03 11:52:07.969] Event consumed: exitzone with parameters [9.0]

Active Events:

Unattended Events:

LOG_PN

[2025-07-03 11:51:23.685] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ●

p4: ○

p5: ○

[2025-07-03 11:51:23.861] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ●

p4: ○

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:51:25.887] 🔥 Transition fired: t0

[2025-07-03 11:51:25.888] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ○

p4: ●

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:51:27.892] 🔥 Transition fired: t8

[2025-07-03 11:51:27.892] Current state of the Petri Net:

p0: ●

p1: ○

p2: ○

p3: ○

p4: ○

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:51:29.896] 🔥 Transition fired: t2

[2025-07-03 11:51:29.897] Current state of the Petri Net:

p0: ○

p1: ●

p2: ○

p3: ○

p4: ○

p5: ○

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:51:31.905] 🔥 Transition fired: t4

[2025-07-03 11:51:31.906] Current state of the Petri Net:

p0: ○

p1: ○

p2: ●

p3: ○

p4: ○

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:51:41.925] 🔥 Transition fired: t7

[2025-07-03 11:51:41.926] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ●

p4: ○

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

⏸ No non-immediate transitions enabled at this time. Waiting...

[2025-07-03 11:51:51.940] 🔥 Transition fired: t0

[2025-07-03 11:51:51.940] Current state of the Petri Net:

p0: ○

p1: ○

p2: ○

p3: ○

p4: ●

p5: ○

🚫 Transition 't4' blocked by condition: free(out s) && low_temp(s)

🚫 Transition 't6' blocked by condition: timer2.end

🚫 Transition 't1' blocked by condition: NWaiting >= limit

[2025-07-03 11:51:53.946] 🔥 Transition fired: t8

[2025-07-03 11:51:53.947] Current state of the Petri Net:














p0: ●

p1: ○

p2: ○
 p3: ○
 p4: ○
 p5: ○
 ⛔ Transition 't4' blocked by condition: free(out s) && low_temp(s)
 ⛔ Transition 't6' blocked by condition: timer2.end
 ⛔ Transition 't1' blocked by condition: NWaiting >= limit
 [2025-07-03 11:51:55.953] 🔥 Transition fired: t2
 [2025-07-03 11:51:55.954] Current state of the Petri Net:
 p0: ○
 p1: ●
 p2: ○
 p3: ○
 p4: ○
 p5: ○
 ⛔ Transition 't4' blocked by condition: free(out s) && low_temp(s)
 ⛔ Transition 't6' blocked by condition: timer2.end
 ⛔ Transition 't1' blocked by condition: NWaiting >= limit
 ⏸ No non-immediate transitions enabled at this time. Waiting...
 [2025-07-03 11:52:07.970] 🔥 Transition fired: t5
 [2025-07-03 11:52:07.970] Current state of the Petri Net:
 p0: ○
 p1: ○
 p2: ○
 p3: ○
 p4: ○
 p5: ●
 ⛔ Transition 't4' blocked by condition: free(out s) && low_temp(s)
 ⛔ Transition 't6' blocked by condition: timer2.end
 ⛔ Transition 't1' blocked by condition: NWaiting >= limit
 [2025-07-03 11:52:09.974] 🔥 Transition fired: t9
 [2025-07-03 11:52:09.975] Current state of the Petri Net:
 p0: ○
 p1: ○
 p2: ○
 p3: ●
 p4: ○
 p5: ○
 ⛔ Transition 't4' blocked by condition: free(out s) && low_temp(s)
 ⛔ Transition 't6' blocked by condition: timer2.end
 ⛔ Transition 't1' blocked by condition: NWaiting >= limit
 ⏸ No non-immediate transitions enabled at this time. Waiting...

LOG_TR

[2025-07-03 11:51:23.858] Initiating TR program...

[2025-07-03 11:51:23.874]  Executing rule with condition: true
[2025-07-03 11:51:23.883]  Event sent to environment: new_car[9.0]
[2025-07-03 11:51:23.883]  Extracted timer command: start for timer: timer1
[2025-07-03 11:51:31.911]  Executing rule with condition: assigned(id, out slot)
[2025-07-03 11:51:31.912]  Starting durative action: park(slot)
[2025-07-03 11:51:39.937]  Stopping durative action: park(slot)
[2025-07-03 11:51:39.937]  Executing rule with condition: already_parked
[2025-07-03 11:51:39.939]  Event sent to environment: parked[9.0, 10.0]
[2025-07-03 11:51:50.980]  Executing rule with condition: true
[2025-07-03 11:51:50.981]  Event sent to environment: new_car[9.0]
[2025-07-03 11:51:50.981]  Extracted timer command: start for timer: timer1
[2025-07-03 11:52:01.016]  Executing rule with condition: high_demand &&
!free(_)
[2025-07-03 11:52:01.016]  Starting durative action: exiting_zone()