PETRI NET EXAMPLES

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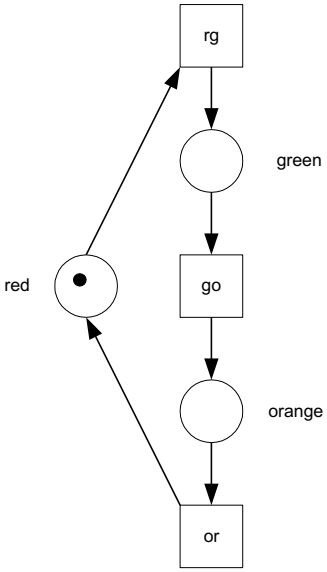
Example: Single traffic light



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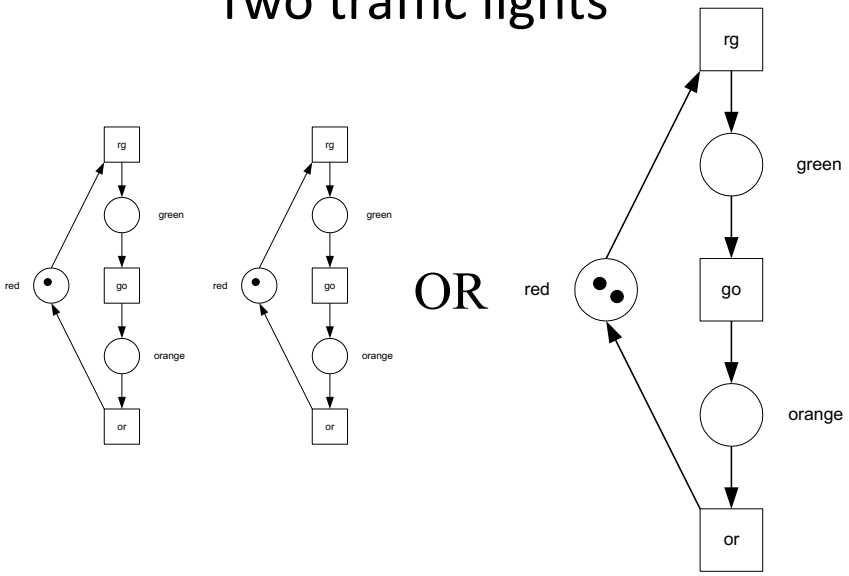
Two traffic lights



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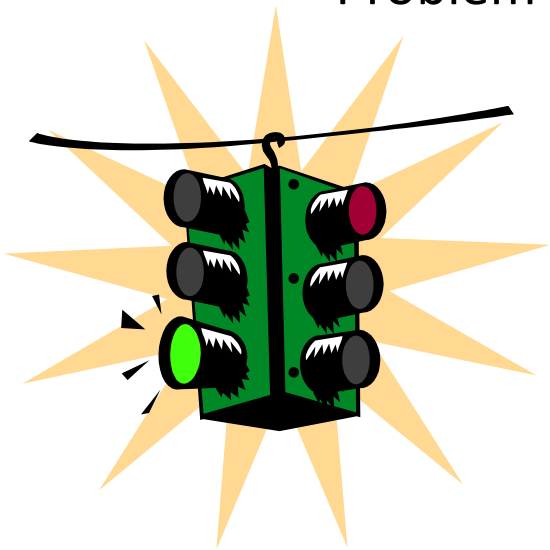
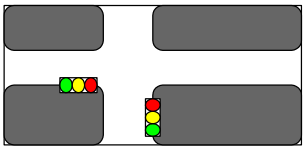
Problem



We don't want opposing lights to be green at the same time!



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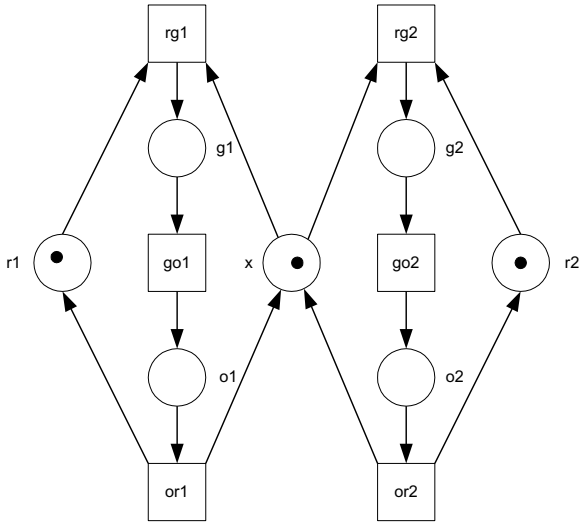
Solution

How to make them alternate?



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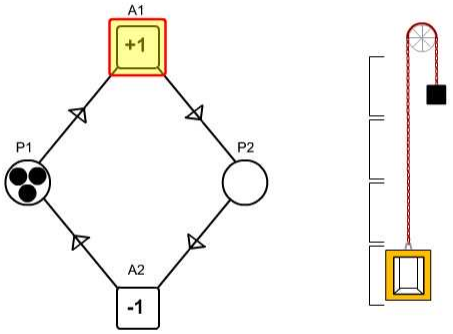
Elevator (1)

n



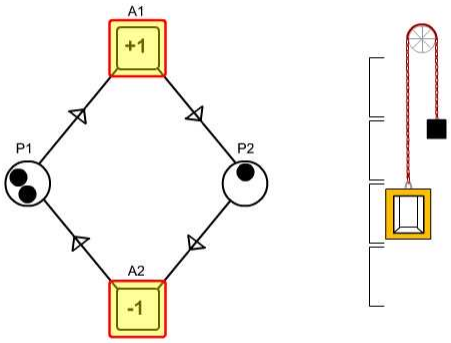
The number of tokens represents the number of vertical movements an elevator can make upwards or downwards in a certain state of the system.

35

35

Elevator (1)

n

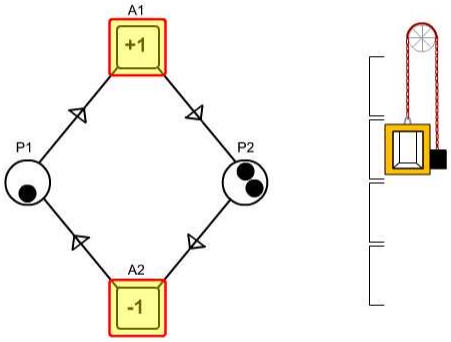


The number of tokens represents the number of vertical movements an elevator can make upwards or downwards in a certain state of the system.

36

Elevator (1)

n

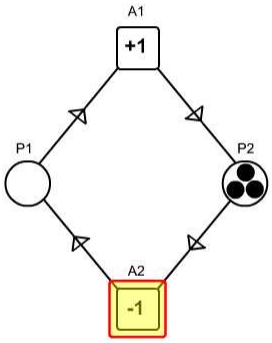


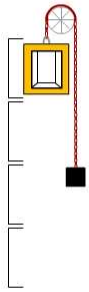
The number of tokens represents the number of vertical movements an elevator can make upwards or downwards in a certain state of the system.

37

Elevator (1)

n





The number of tokens represents the number of vertical movements an elevator can make upwards or downwards in a certain state of the system.

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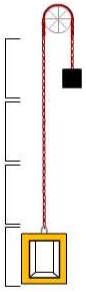
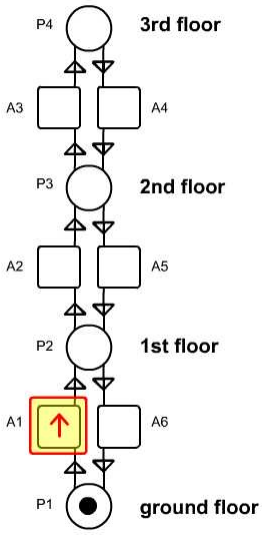
Elevator (2)

The token represents the elevator.





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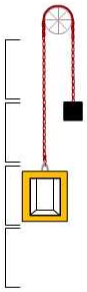
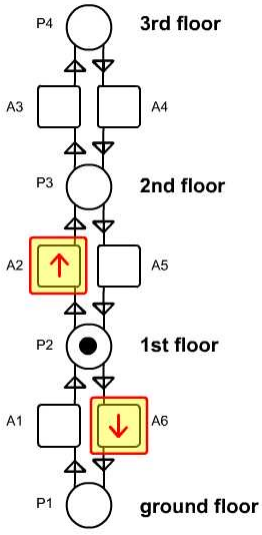
Elevator (2)

The token represents the elevator.





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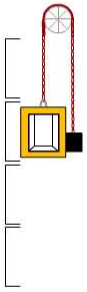
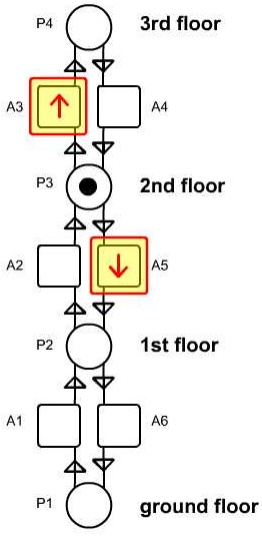
Elevator (2)

The token represents the elevator.





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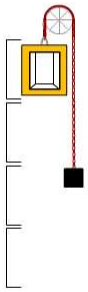
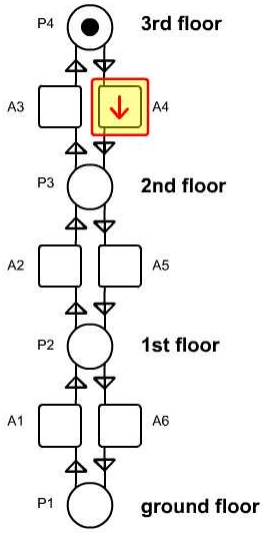
Elevator (2)

The token represents the elevator.

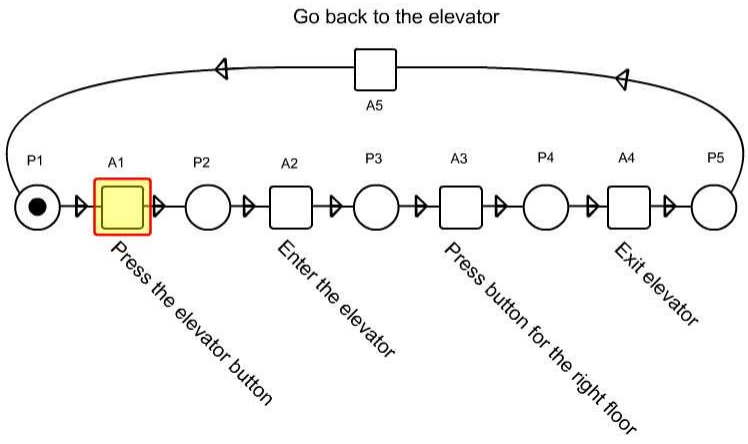




42

Elevator (3)

The token is a person using the elevator.



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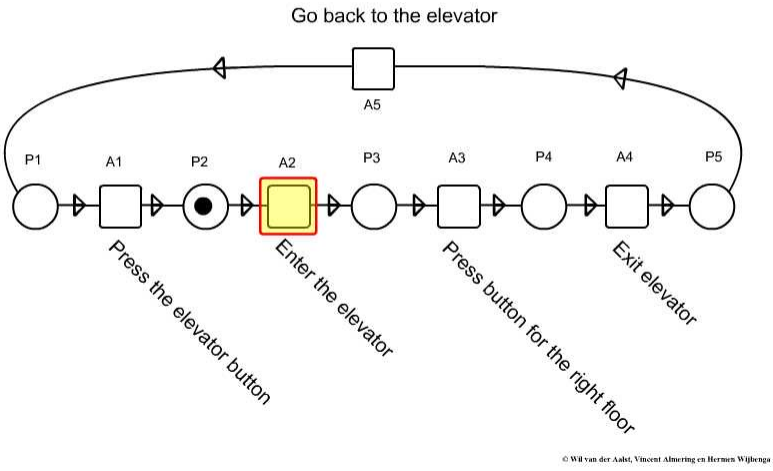
Elevator (3)

The token is a person using the elevator.



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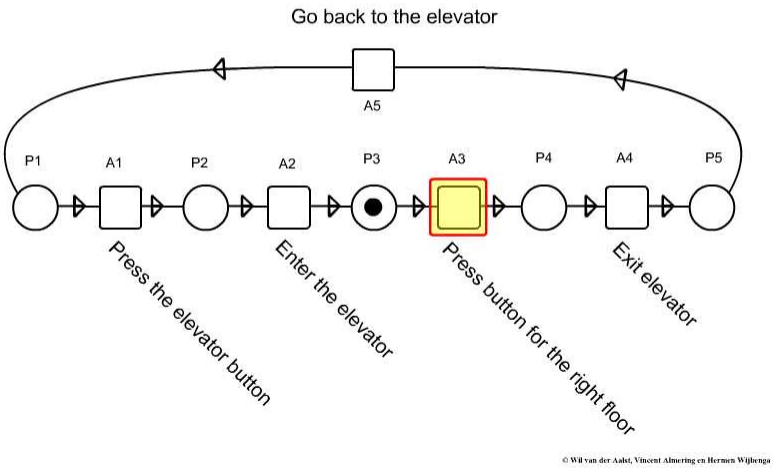
Elevator (3)

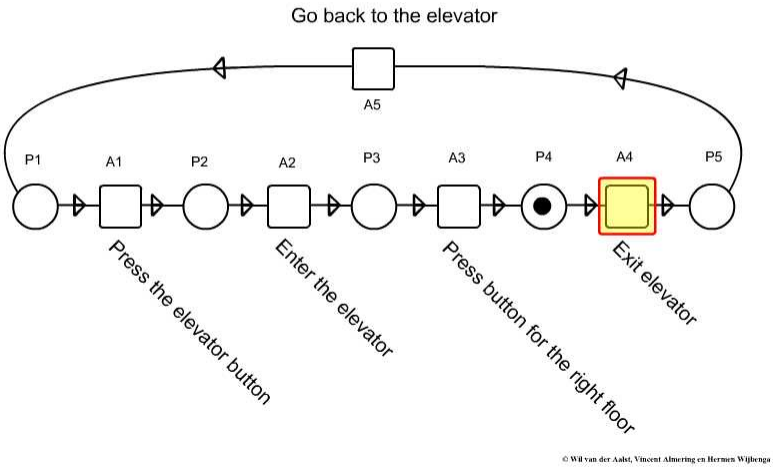
The token is a person using the elevator.



45

Elevator (3)

The token is a person using the elevator.



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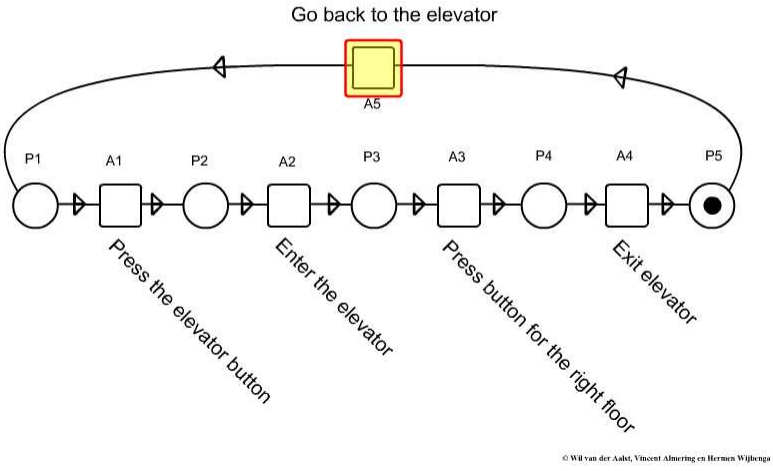
Elevator (3)

The token is a person using the elevator.



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Exercise: Train system

- Consider a railroad system with 4 tracks (1,2,3,4) and 2 trains (A,B). No two trains should be at the same track at the same time and we want to distinguish the two trains.

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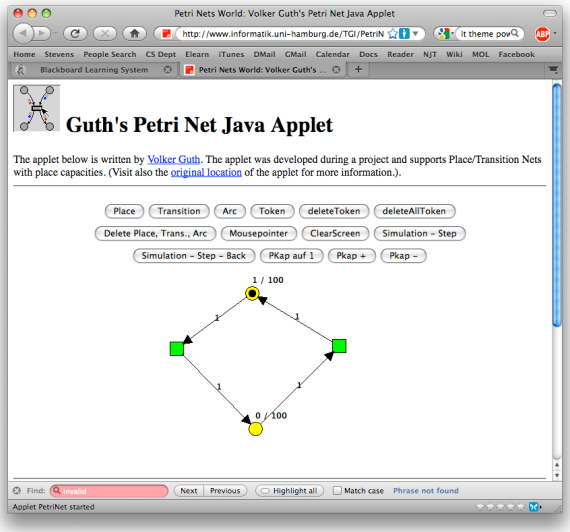
Train System



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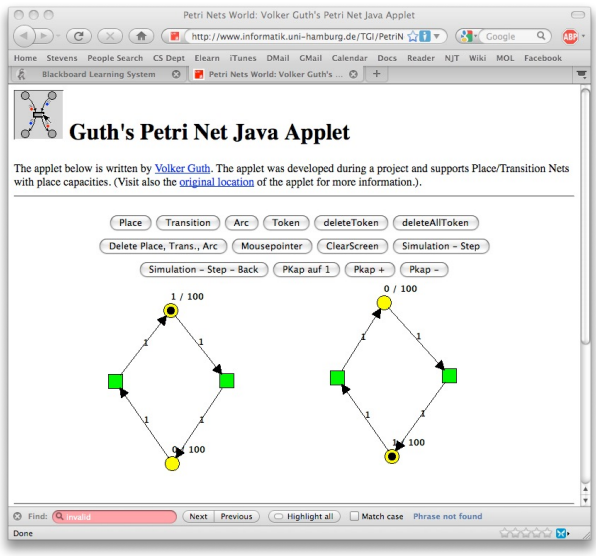
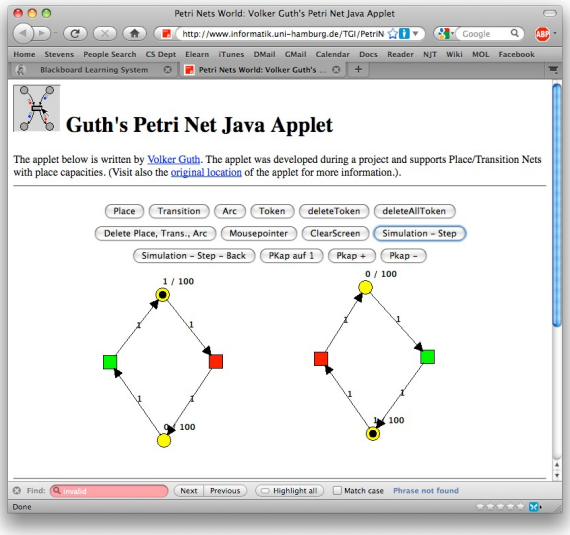
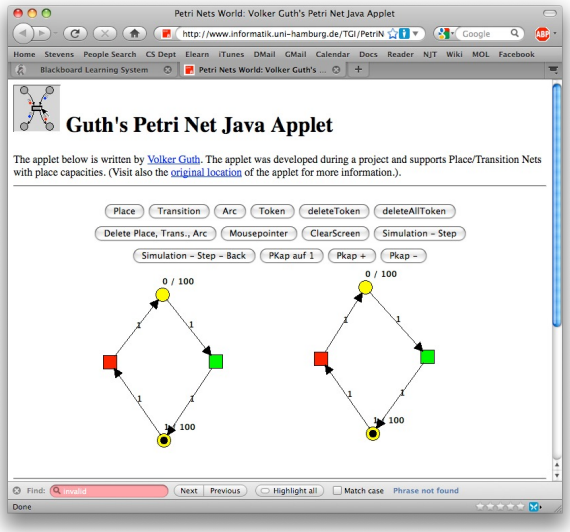
Train System



Train System



Train System



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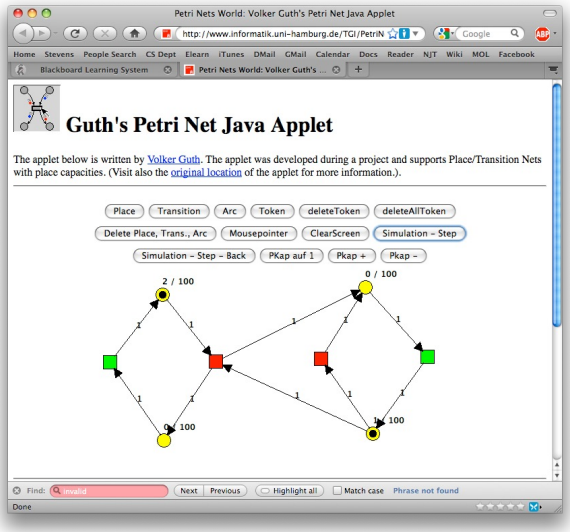
Train System



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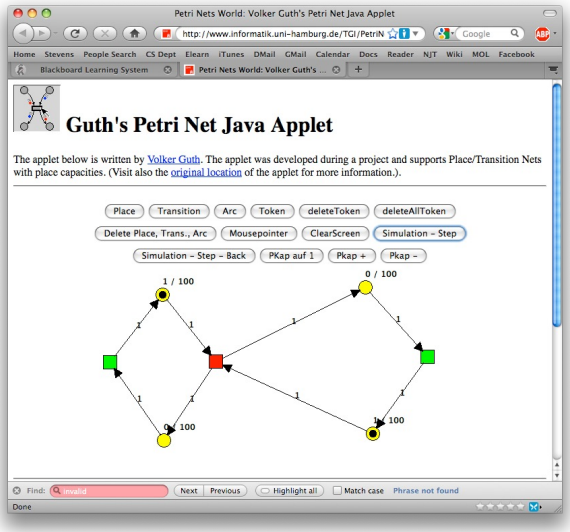
Train System



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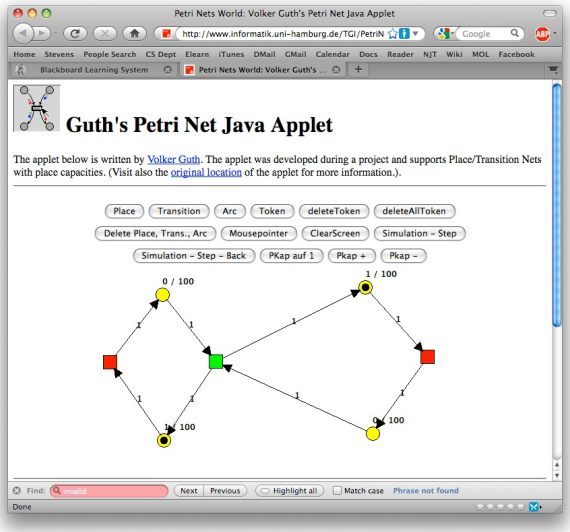
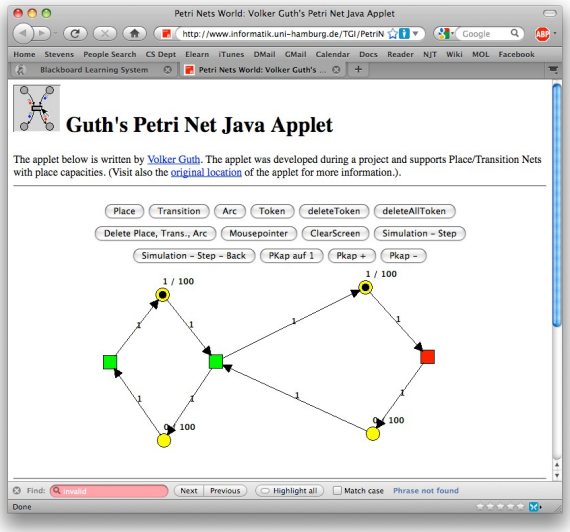
Train System



55

55

Train System



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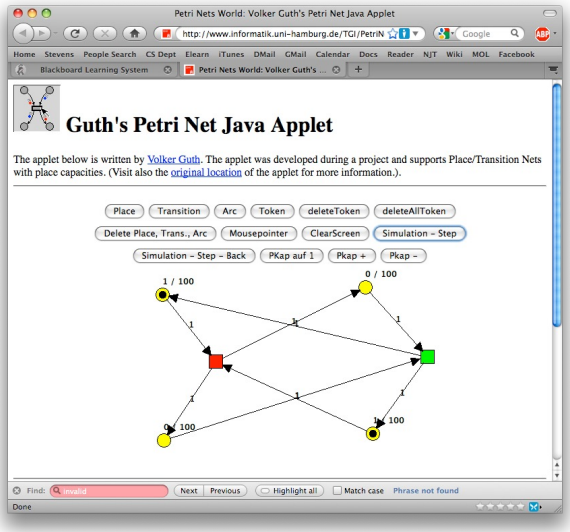
Train System



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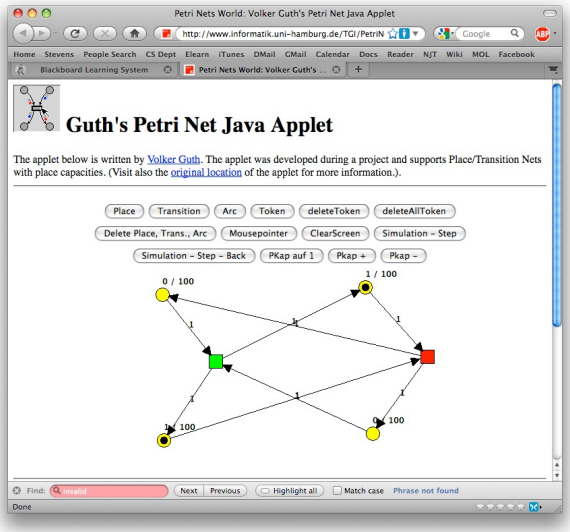
Train System



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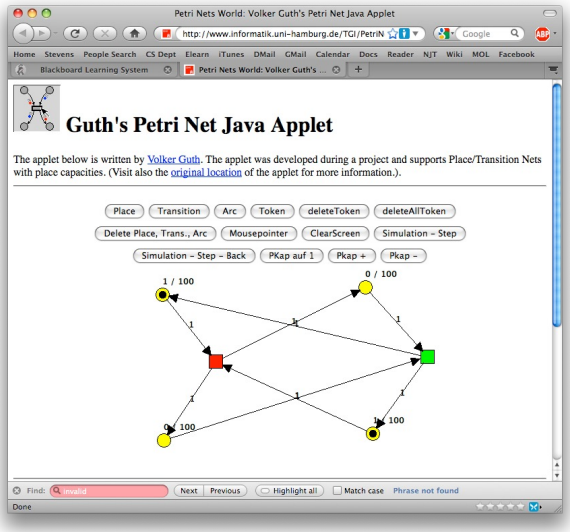
Train System



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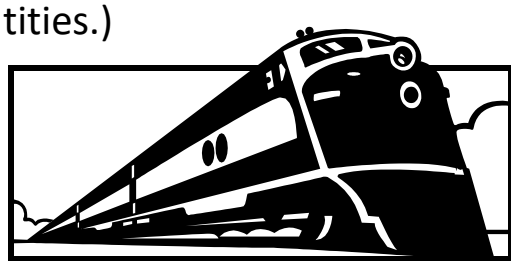
Exercise: Train system

- Consider a railroad system with 4 tracks (1,2,3,4) and 2 trains (A,B). No two trains should be at the same track at the same time. Moreover the next track should also be free to allow for a safe distance. (We do not care about train identities.)



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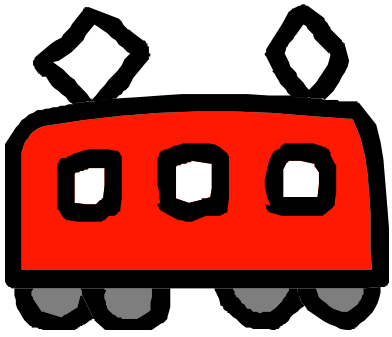
Exercise: Train system

- Consider a railroad system with 4 tracks (1,2,3,4) and 2 trains. Tracks are free, busy or claimed. Trains need to claim the next track before entering.



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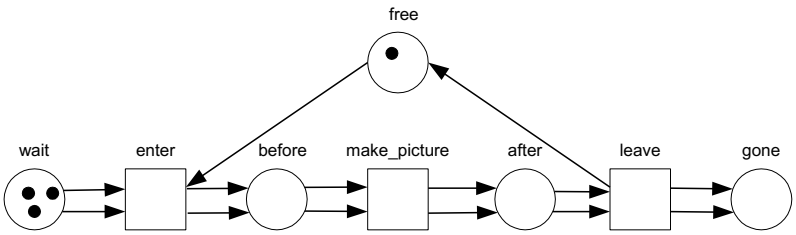
Multiple arcs connecting two nodes

- The number of arcs determines the number of tokens to be consumed/produced.



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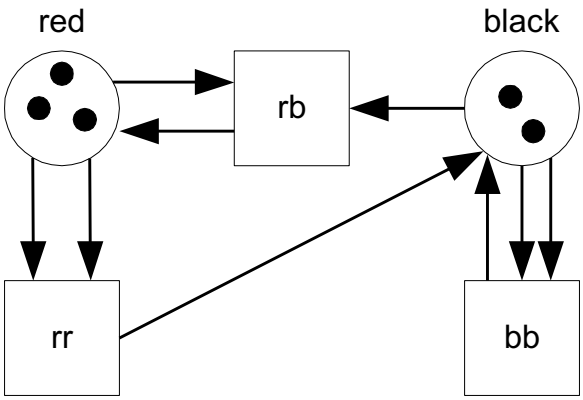
Example: Ball game



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