Trabalho de IA
(Busy Police)

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Modelagem (objetos)

```
% ladrao
ladrao([10, 5]).

% paredes
paredes(0, 11).

% tetos
tetos(0, 6).
```

```
% carrinhos
carrinho(8, 1).
carrinho(3, 2).
carrinho(4, 3).
carrinho(3, 5).
carrinho(4, 5).

% escadas
escada(2, 1).
escada(9, 1).
escada(5, 2).
escada(3, 3).
escada(8, 3).
escada(10, 3).
escada(1, 4).
escada(6, 4).
```

Modelagem (“andando para a direita”)

```
s([X, Y], [NX, Y]) :-
    NX is X + 1,
    pode_direita(sim, [X, Y]).
```

Modelagem (verificação)

```
pode_pular_direita(nao, [X, Y]) :-
    D is X + 1, not(carrinho(D, Y)), !;
    D is X + 2, paredes(_, D), !;
    D is X + 2, carrinho(D, Y), !;
    D is X + 2, escada(D, Y), !;
    D is X + 2, NY is Y - 1, escada(D, NY), !;
    D is X + 2, ladrao([D, Y]), !.
pode_pular_direita(sim, [X, Y]) :- not(pode_pular_direita(nao, [X, Y])).
```

Busca em largura

```
busca([[Estado|Caminho]|_], [Estado|Caminho]) :- ladrao(Estado).
busca([Primeiro|Outros], Solucao) :-
    estende(Primeiro, Sucessores),
    concatena(Outros, Sucessores, NovaFronteira),
    busca(NovaFronteira, Solucao).
```

Busca em largura

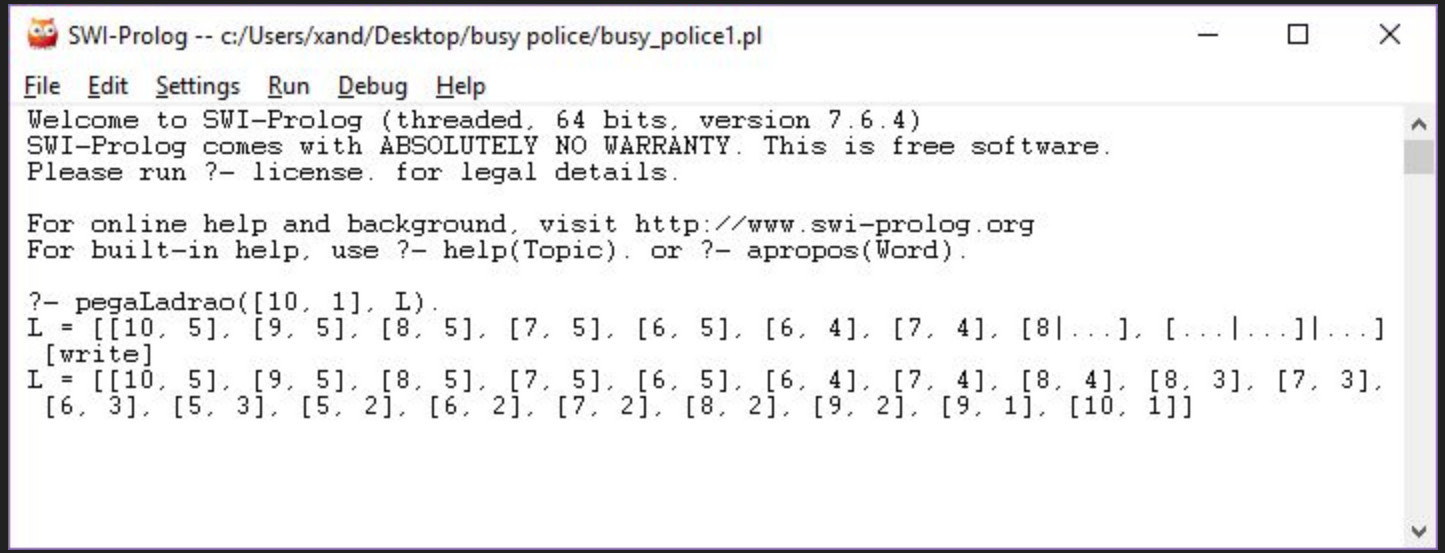
```
estende([Estado|Caminho], ListaSucessores) :-


bagof([Sucessor, Estado|Caminho],

(s(Estado, Sucessor), not(pertence(Sucessor, [Estado|Caminho]))),
ListaSucessores), !.


estende(_, []).
```

Ambiente 1


SWI-Prolog -- c:/Users/xand/Desktop/busy police/busy_police1.pl
File Edit Settings Run Debug Help
Welcome to SWI-Prolog (threaded, 64 bits, version 7.6.4)
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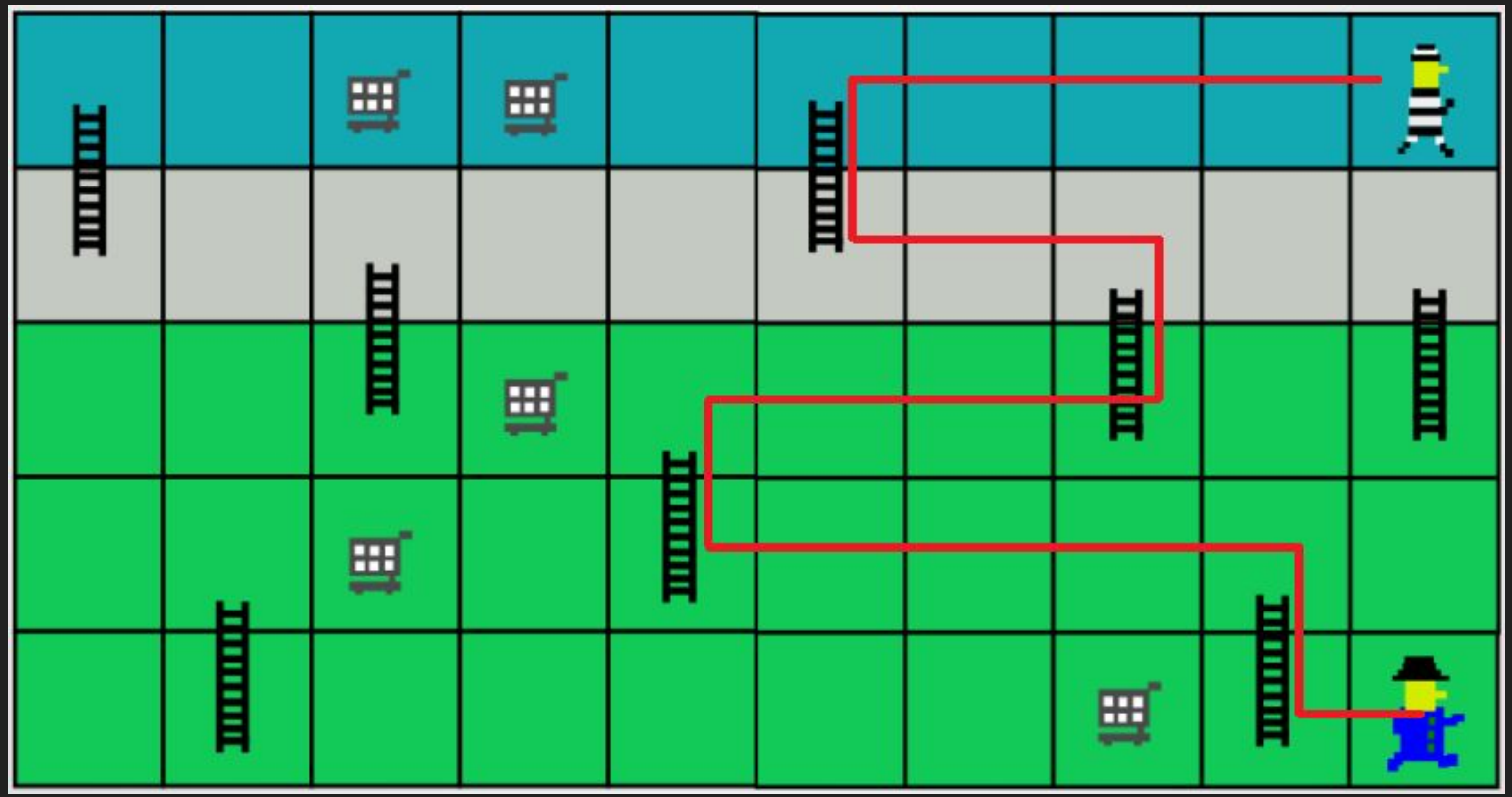
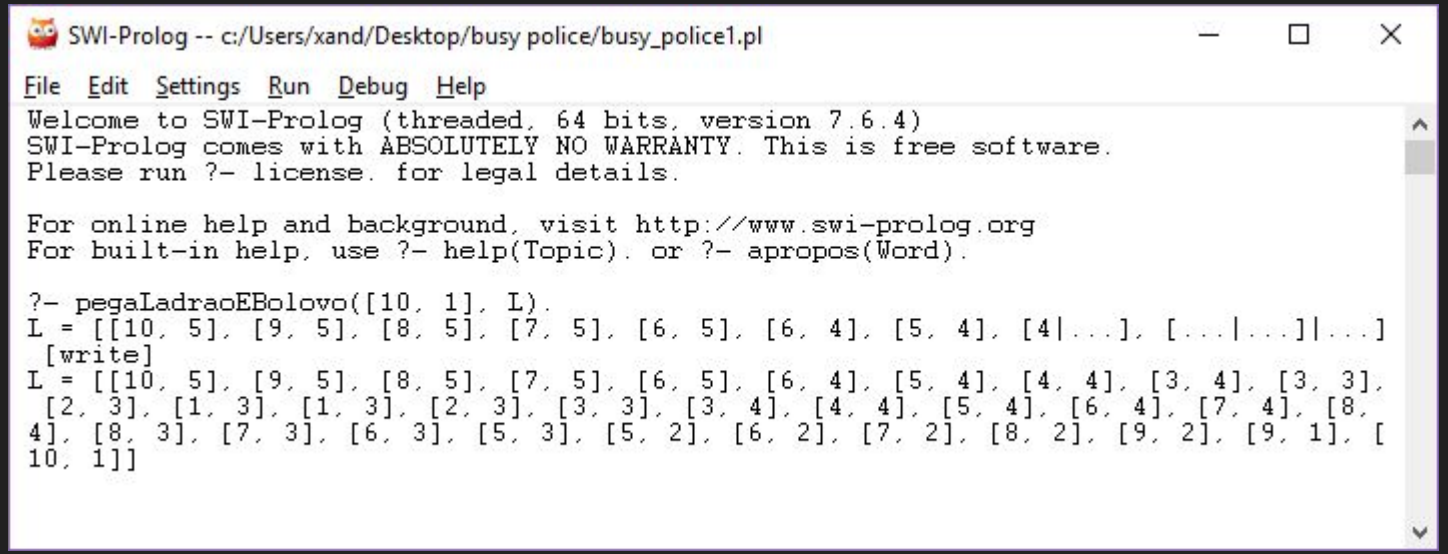
?- pegaLadrao([10, 1], L).
L = [[10, 5], [9, 5], [8, 5], [7, 5], [6, 5], [6, 4], [7, 4], [8|...], [...|...]|...]
[write]
L = [[10, 5], [9, 5], [8, 5], [7, 5], [6, 5], [6, 4], [7, 4], [8, 4], [8, 3], [7, 3],
[6, 3], [5, 3], [5, 2], [6, 2], [7, 2], [8, 2], [9, 2], [9, 1], [10, 1]]

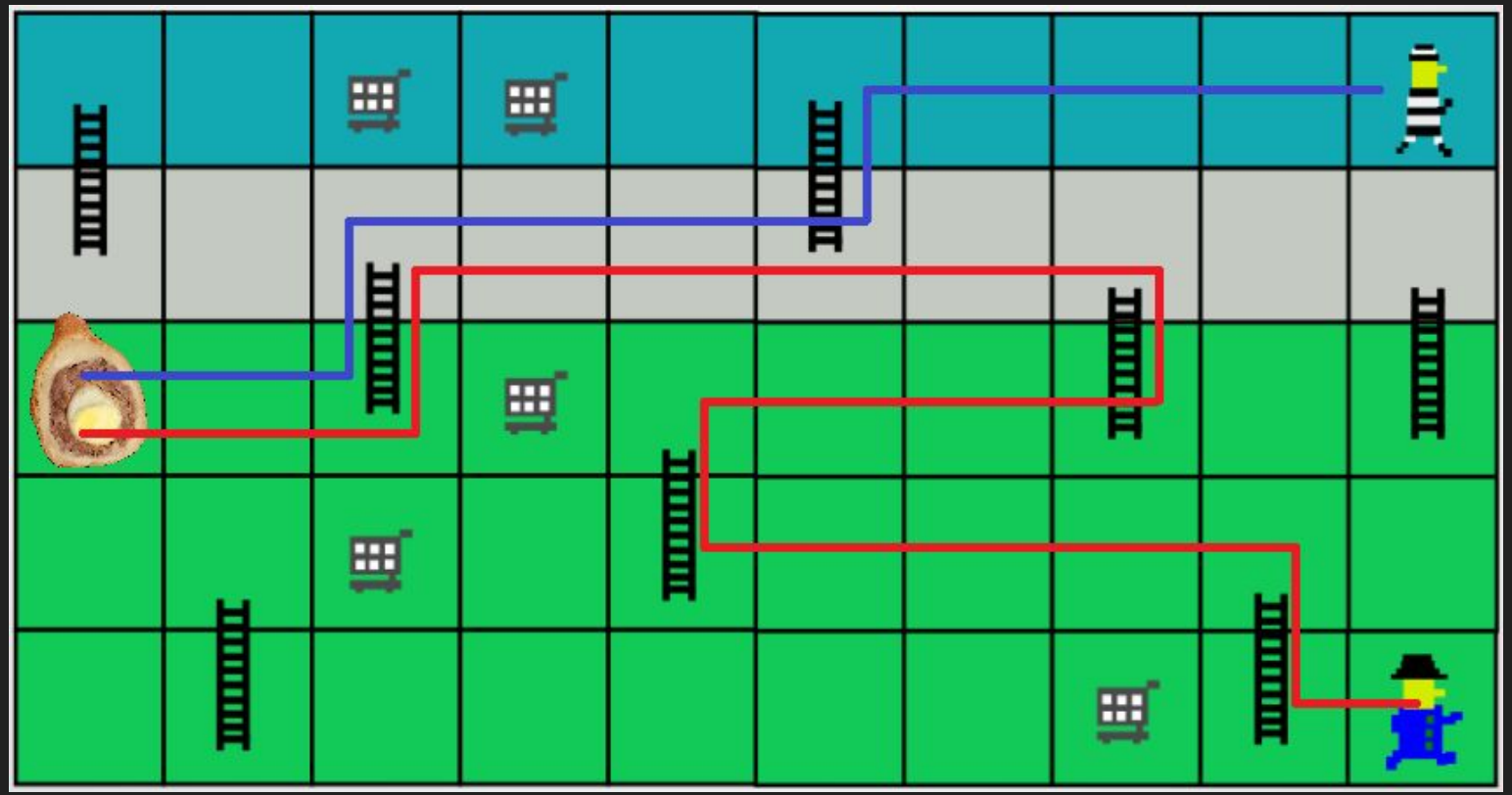
Ambiente 1 (resolvido)



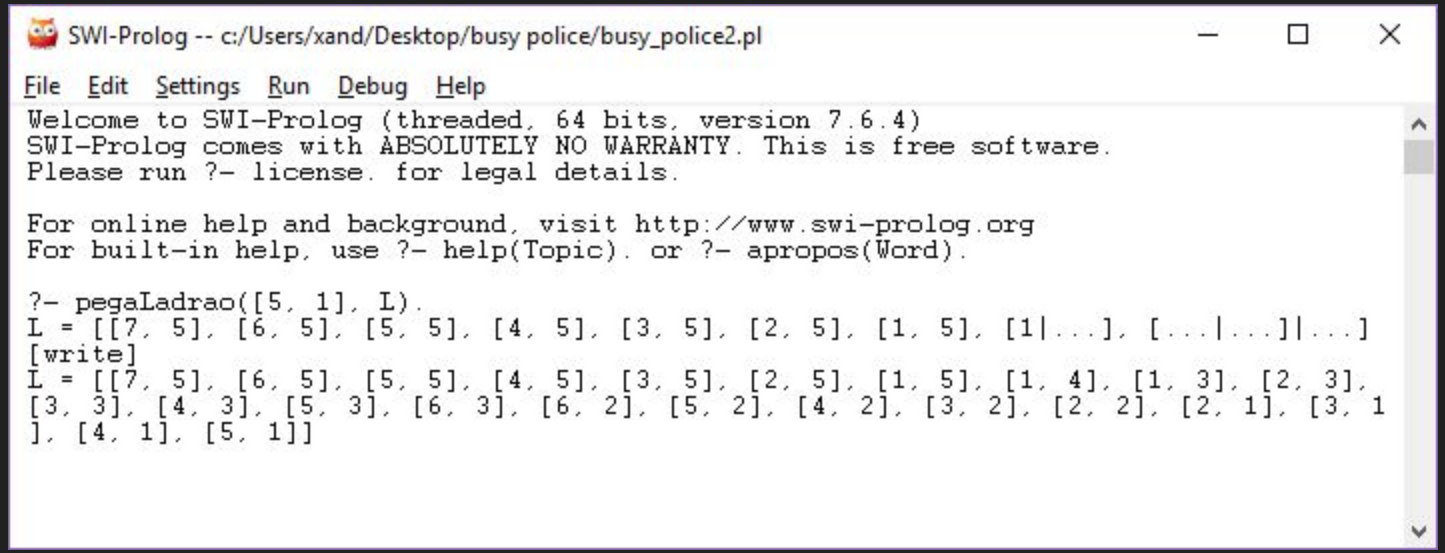
Ambiente 1 Bonus Game



Ambiente 1 (Bonus Game resolvido)



Ambiente 2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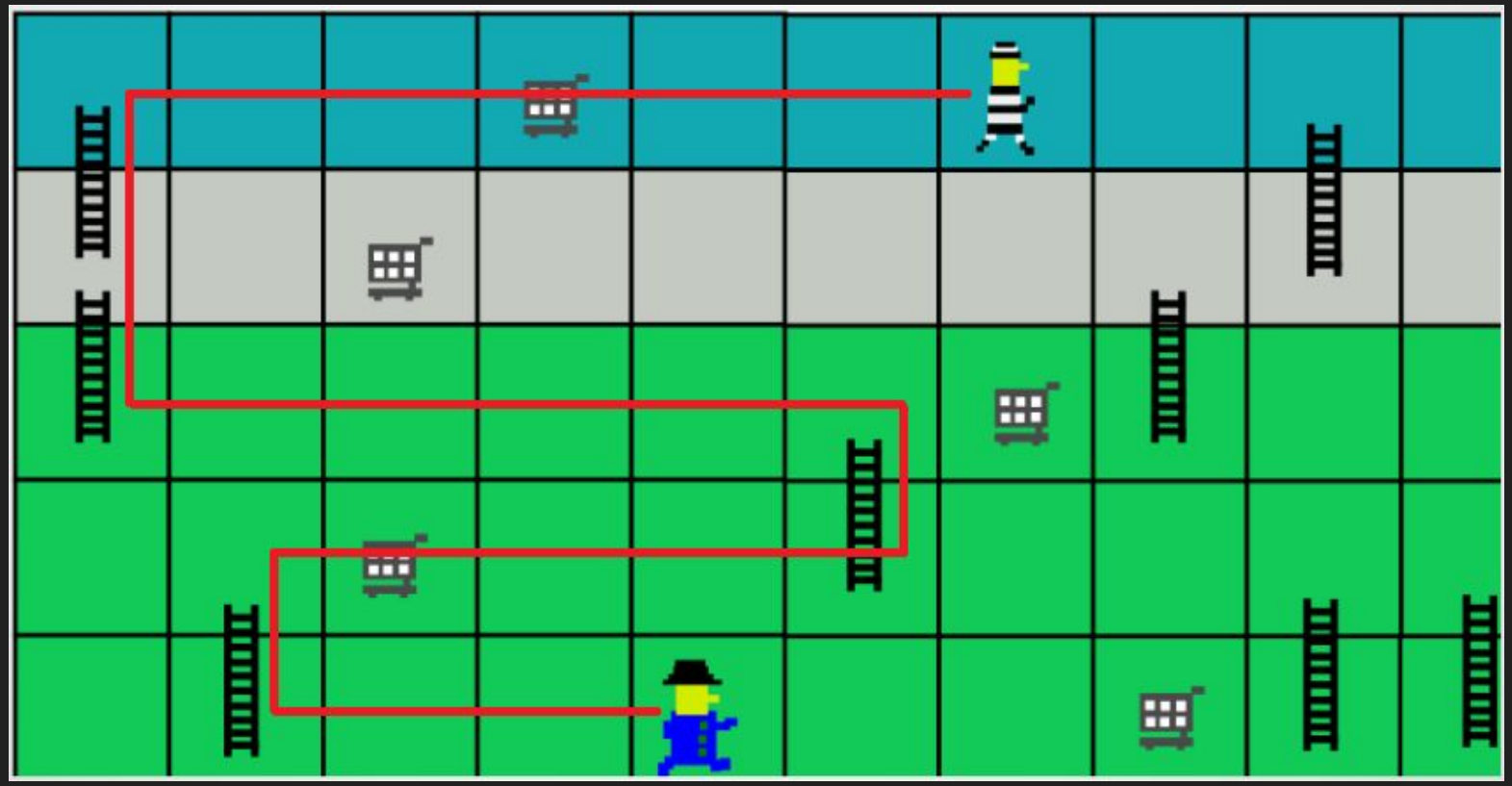
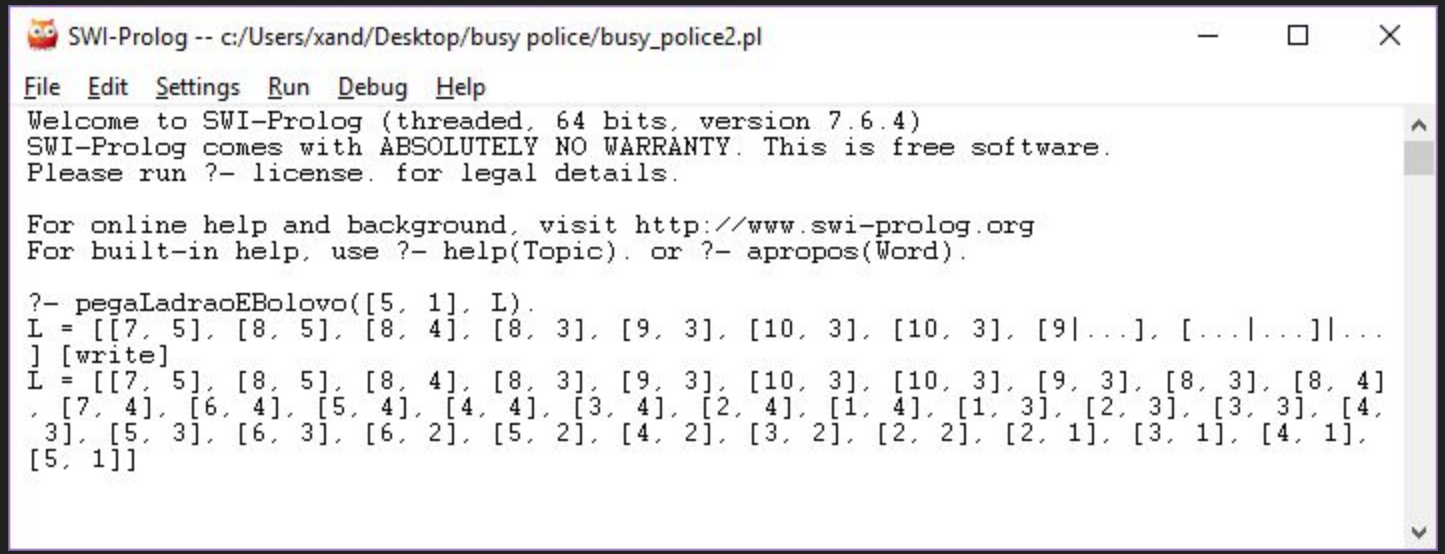
?- pegaLadrao([5, 1], L).
L = [[7, 5], [6, 5], [5, 5], [4, 5], [3, 5], [2, 5], [1, 5], [1|...], [...|...]|...]
[write]
L = [[7, 5], [6, 5], [5, 5], [4, 5], [3, 5], [2, 5], [1, 5], [1, 4], [1, 3], [2, 3],
[3, 3], [4, 3], [5, 3], [6, 3], [6, 2], [5, 2], [4, 2], [3, 2], [2, 2], [2, 1], [3, 1
], [4, 1], [5, 1]]

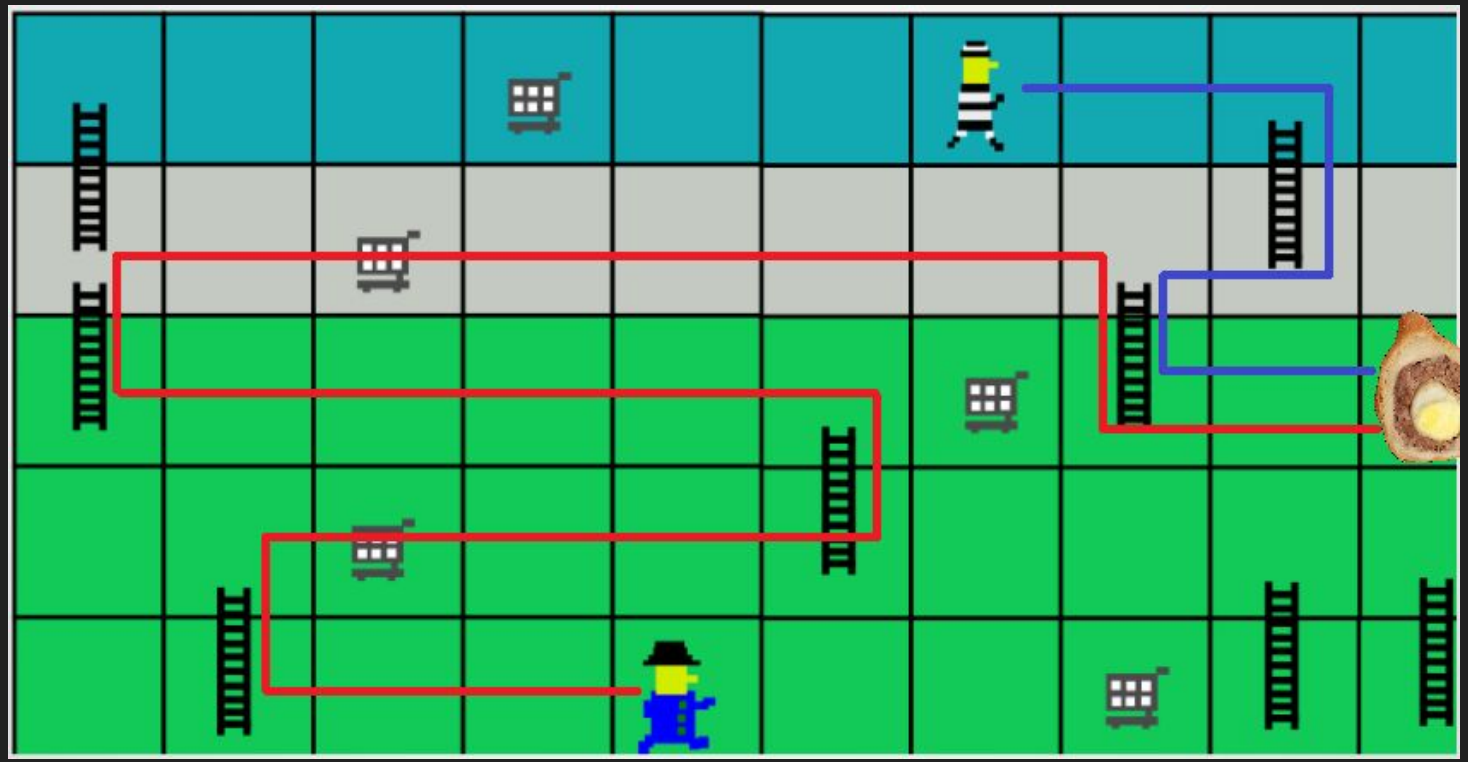
Ambiente 2 (resolvido)



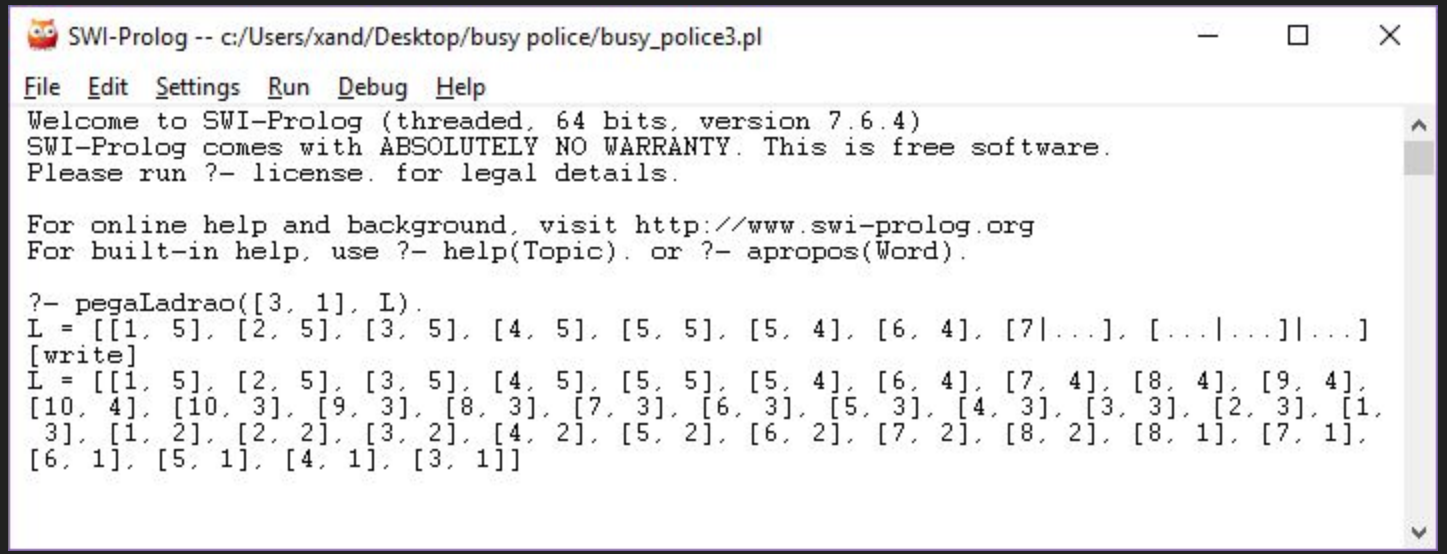
Ambiente 2 Bonus Game



Ambiente 2 (Bonus Game resolvido)



Ambiente 3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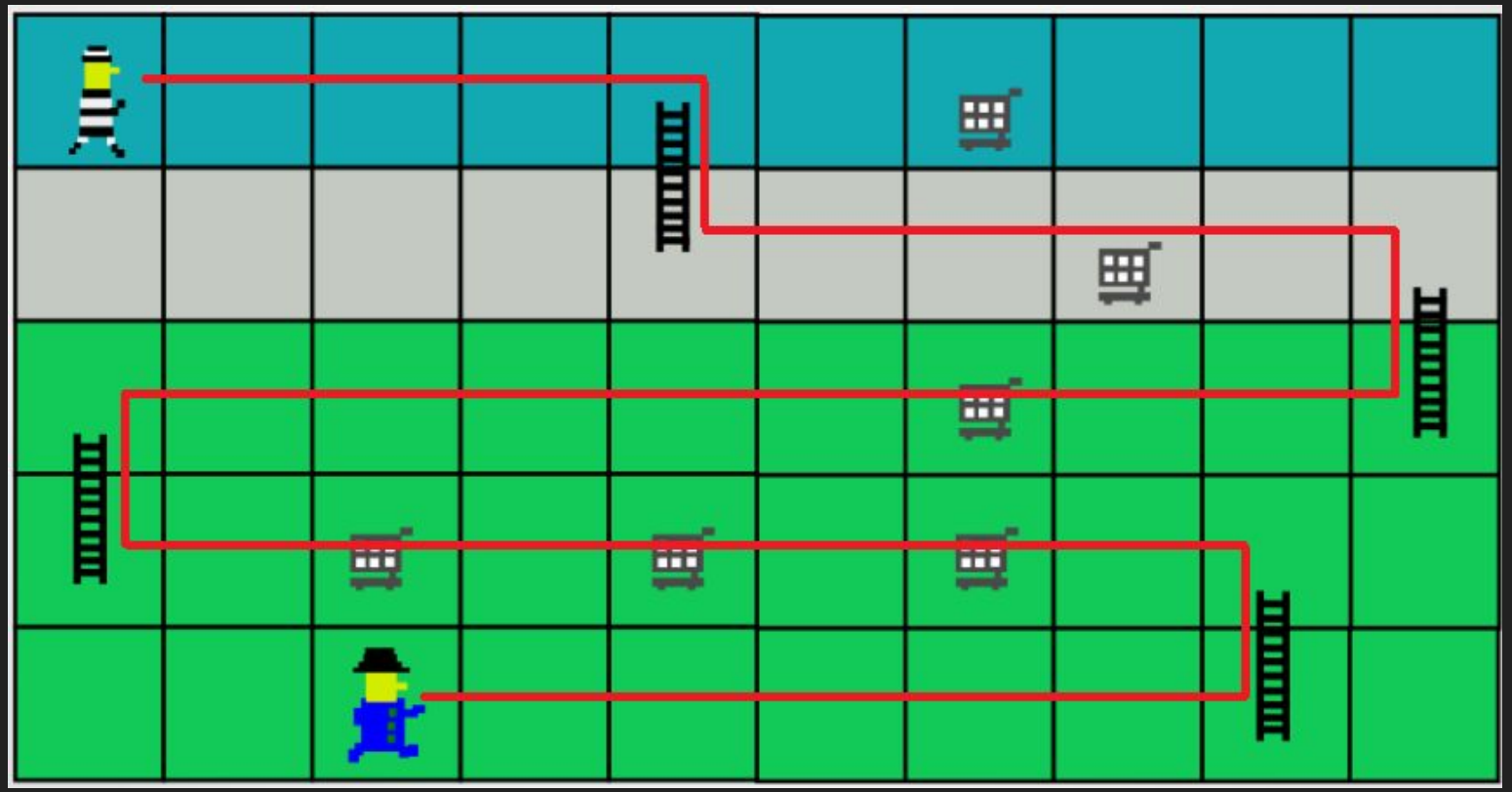
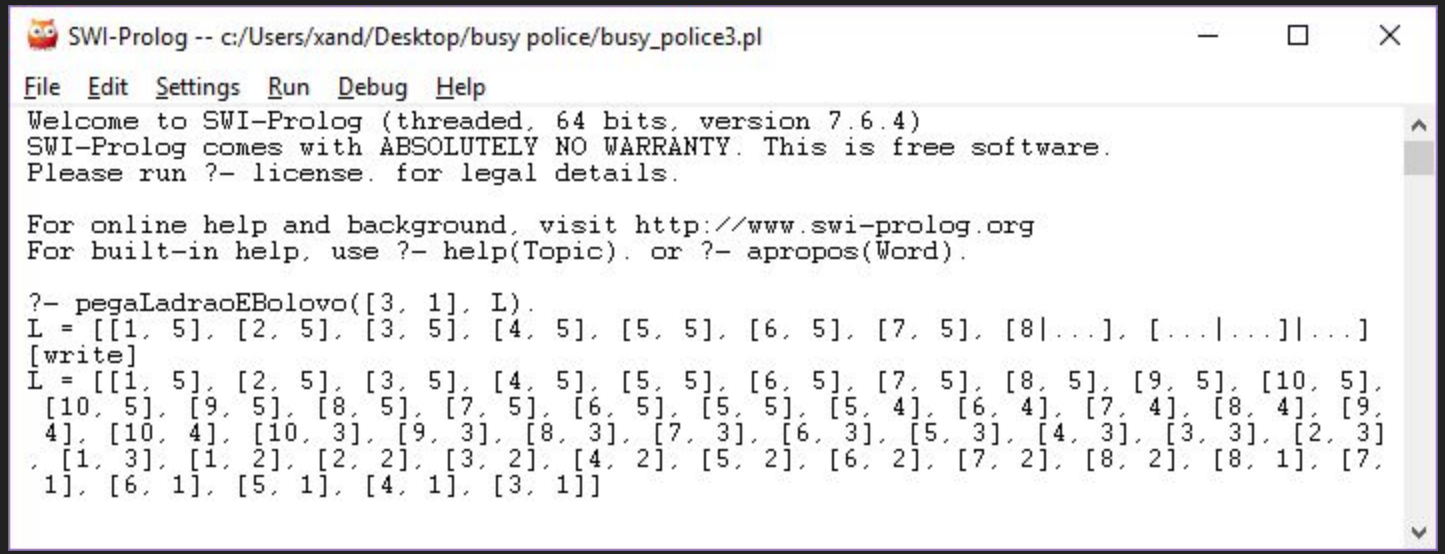
[write]
L = [[1, 5], [2, 5], [3, 5], [4, 5], [5, 5], [5, 4], [6, 4], [7, 4], [8, 4], [9, 4],
[10, 4], [10, 3], [9, 3], [8, 3], [7, 3], [6, 3], [5, 3], [4, 3], [3, 3], [2, 3], [1,
3], [1, 2], [2, 2], [3, 2], [4, 2], [5, 2], [6, 2], [7, 2], [8, 2], [8, 1], [7, 1],
[6, 1], [5, 1], [4, 1], [3, 1]]

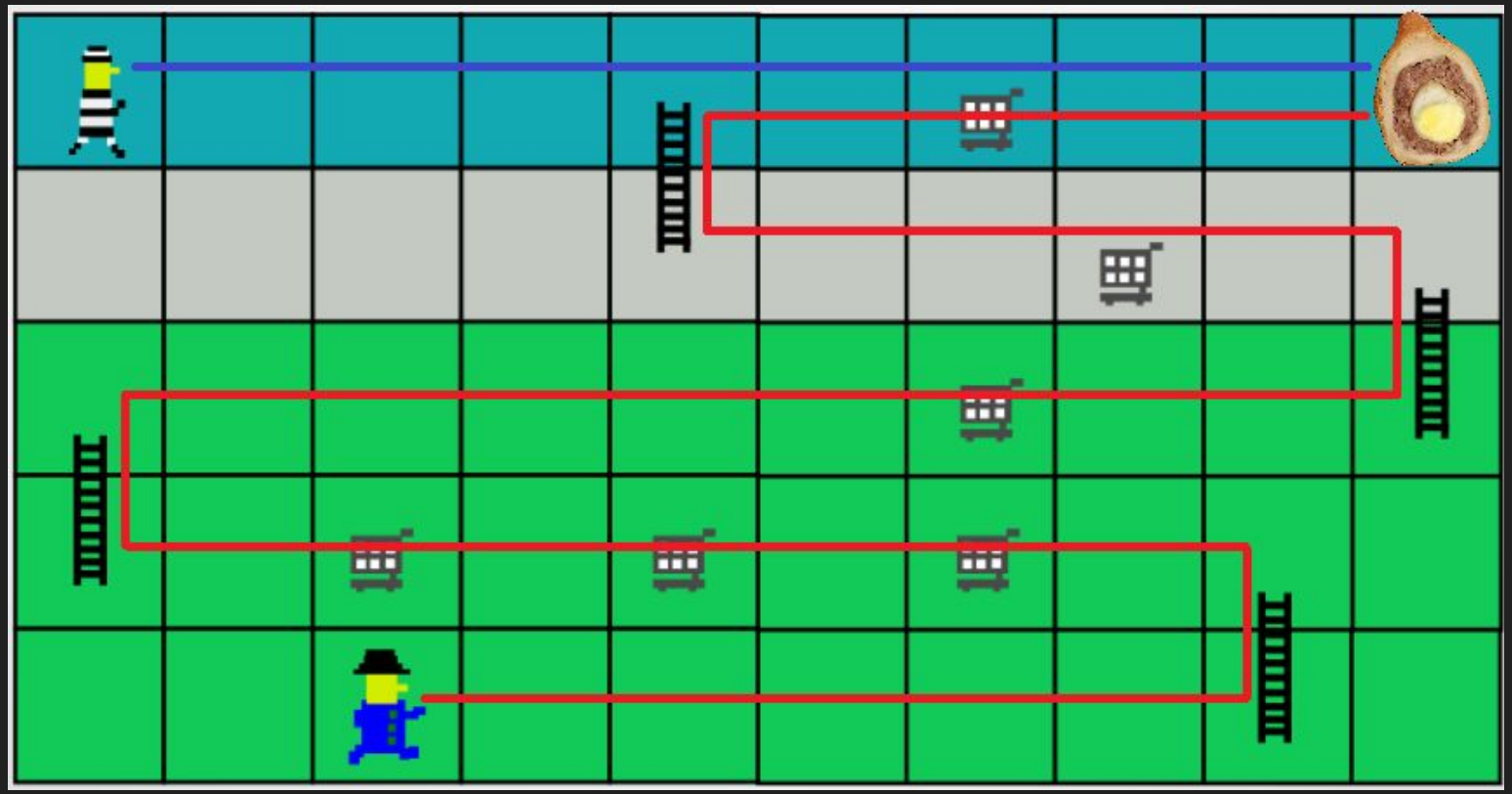
Ambiente 3 (resolvido)



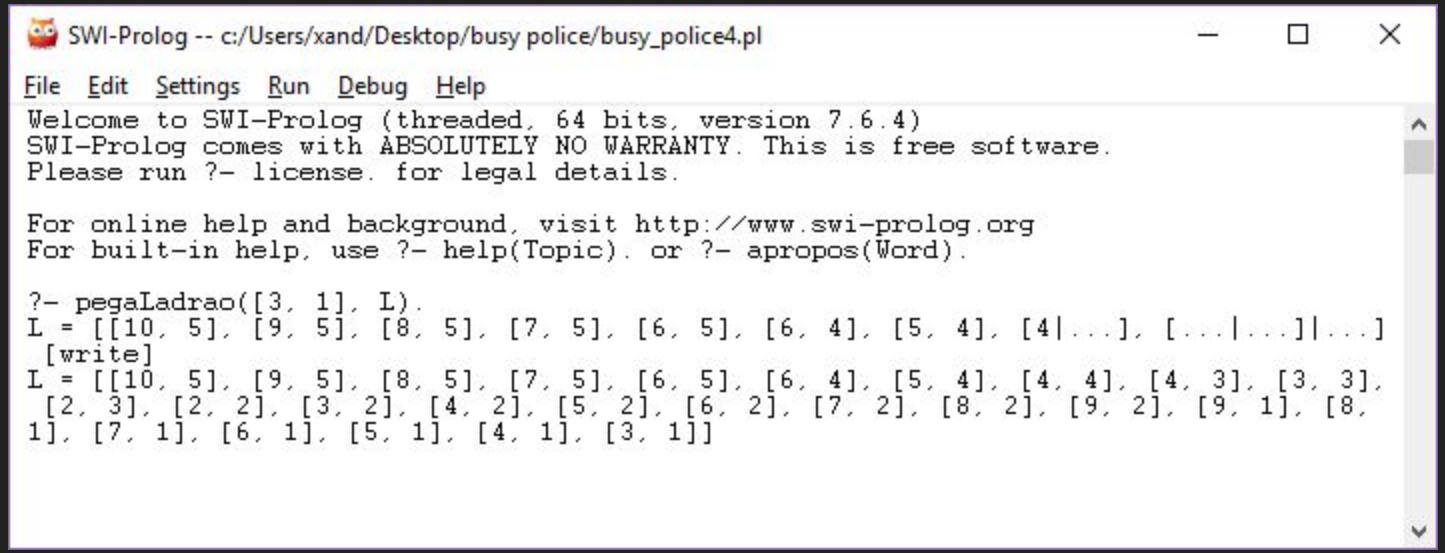
Ambiente 3 Bonus Game



Ambiente 3 (Bonus Game resolvido)



Ambiente 4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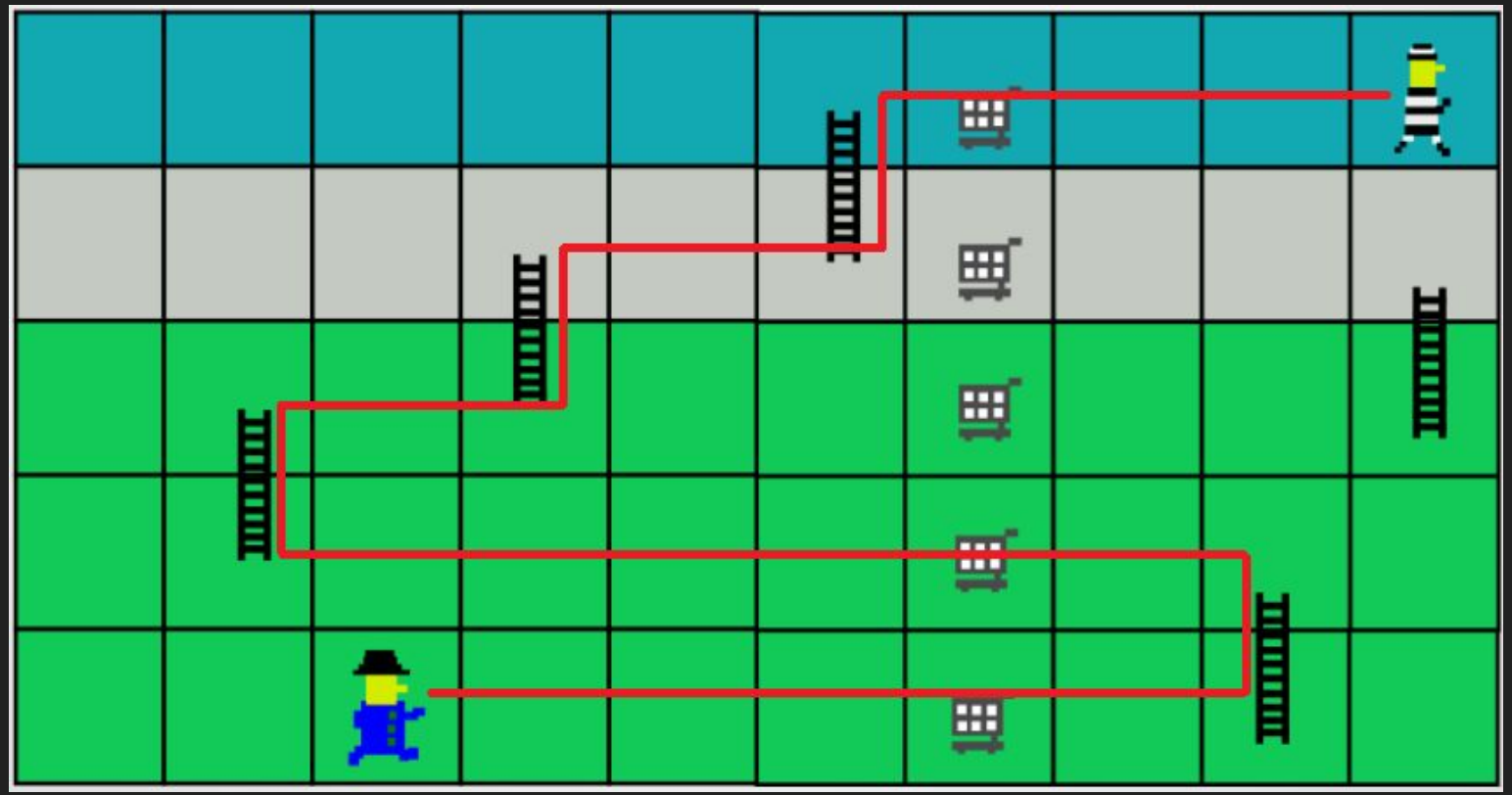
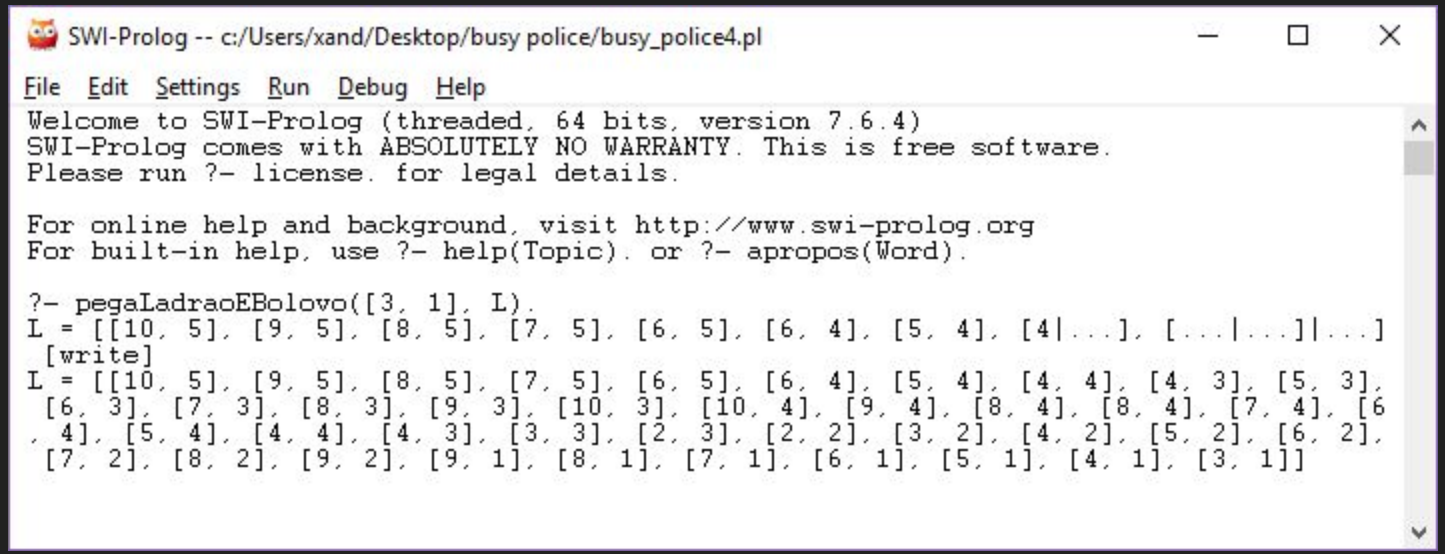
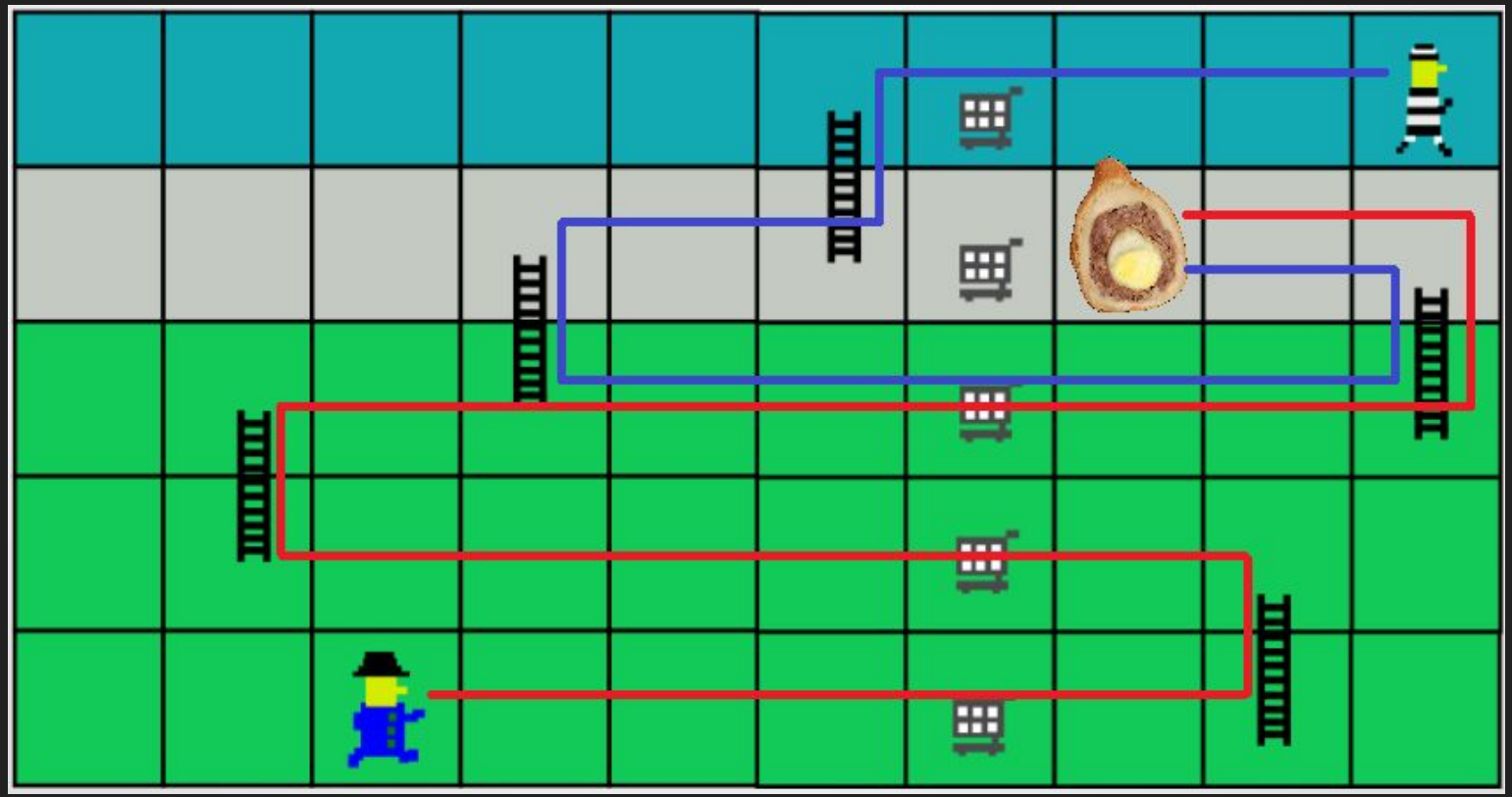
[write]
L = [[10, 5], [9, 5], [8, 5], [7, 5], [6, 5], [6, 4], [5, 4], [4, 4], [4, 3], [3, 3],
[2, 3], [2, 2], [3, 2], [4, 2], [5, 2], [6, 2], [7, 2], [8, 2], [9, 2], [9, 1], [8,
1], [7, 1], [6, 1], [5, 1], [4, 1], [3, 1]]

Ambiente 4 (resolvido)



Ambiente 4 Bonus Game



Ambiente 4 (Bonus Game resolvido)