Wumpus World - Improvements

- Alexandre Dietrich
- Patrick Chabelski
- Rodolfo Vasconcelos

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Instructor: Larry Simon

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GitHub: https://github.com/ravasconcelos/wumpus_world/ (https://github.com/ravasconcelos/wumpus_world/)

About the Project

This Prolog implementation of Wumpus World has some improvements afer the analysis made on the original code.

More details can be found in this other Notebook: https://swish.swi-prolog.org/p/Wumpus%20World%20-%20Explained.swinb (https://swish.swi-prolog.org/p/Wumpus%20World%20-%20Explained.swinb)

The original code is implemented by Richard O. Legendi and can be found at https://github.com/rlegendi/wumpus-prolog/ (https://github.com/rlegendi/wumpus-prolog/)

Main changes:

1. Change the gold location as per Fig. 7.2 (https://raw.githubusercontent.com/ravasconcelos/wumpus_world/master/images/figure_7_2.png)
2. Remove unused code
3. Ask_KB checks for adjacent cells
4. add_gold_KB has similar implementation as wumpus and pit

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≡ ?- start.
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Initializing started...
Let the game begin!




New Round: [[1,1]]
I'm in [1,1], seeing: [no,no,no]
KB learn [1,2] - no Wumpus there!
KB learn [1,0] - no Wumpus there!
KB learn [2,1] - no Wumpus there!
KB learn [0,1] - no Wumpus there!
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KB learn [1,2] - there's no Pit there!
KB learn [1,0] - there's no Pit there!
KB learn [2,1] - there's no Pit there!
KB learn [0,1] - there's no Pit there!
KB learn [1,2] - there's no gold here!
KB learn [1,0] - there's no gold here!
KB learn [2,1] - there's no gold here!
KB learn [0,1] - there's no gold here!
ask_KB VisitedList=[[1,1]] - Action=_25476
agent_location=[1,1]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
L was not visited before= [1,2]
L=[1,2] is adjacent to AL_=[1,1]
New Agent Location: [1,2]
Assume L as the new location= [1,2]
I'm going to: [1,2]
New time: 1
New score: -1
VisitedList = [[1,2],[1,1]]
There's still something to do...



New Round: [[1,2],[1,1]]
I'm in [1,2], seeing: [no,yes,no]
KB learn [1,3] - no Wumpus there!
KB learn [1,1] - no Wumpus there!
KB learn [2,2] - no Wumpus there!
KB learn [0,2] - no Wumpus there!
KB learn [1,3] - its a Pit!
KB learn [1,1] - its a Pit!
KB learn [2,2] - its a Pit!
KB learn [0,2] - its a Pit!
KB learn [1,3] - there's no gold here!
KB learn [1,1] - there's no gold here!
KB learn [2,2] - there's no gold here!
KB learn [0,2] - there's no gold here!
ask_KB VisitedList=[[1,2],[1,1]] - Action=_42768
agent_location=[1,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
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There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,3]
There is no Wumpus in L= [1,1]
There is no Wumpus in L= [2,2]
There is no Wumpus in L= [0,2]
I'm in [1,2], seeing: [no,no,no]
KB learn [1,3] - no Wumpus there!
KB learn [1,1] - no Wumpus there!
KB learn [2,2] - no Wumpus there!
KB learn [0,2] - no Wumpus there!
KB learn [1,3] - there's no Pit there!
KB learn [1,1] - there's no Pit there!
KB learn [2,2] - there's no Pit there!
KB learn [0,2] - there's no Pit there!
KB learn [1,3] - there's no gold here!
KB learn [1,1] - there's no gold here!
KB learn [2,2] - there's no gold here!
KB learn [0,2] - there's no gold here!
ask_KB VisitedList=[[1,2],[1,1]] - Action=_42776
agent_location=[1,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
L=[1,3] is adjacent to AL_=[1,2]
New Agent Location: [1,3]
Assume L as the new location= [1,3]
I'm going to: [1,3]
New time: 2
New score: -2
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VisitedList = [[1,3],[1,2],[1,1]]
Agent was fallen into a pit!
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
L was not visited before= [2,2]
L=[2,2] is adjacent to AL_=[1,2]
New Agent Location: [2,2]
Assume L as the new location= [2,2]
I'm going to: [2,2]
New time: 3
New score: -3
VisitedList = [[2,2],[1,2],[1,1]]
There's still something to do...



New Round: [[2,2],[1,2],[1,1]]
I'm in [2,2], seeing: [no,no,no]
KB learn [2,3] - no Wumpus there!
KB learn [2,1] - no Wumpus there!
KB learn [3,2] - no Wumpus there!
KB learn [1,2] - no Wumpus there!
KB learn [2,3] - there's no Pit there!
KB learn [2,1] - there's no Pit there!
KB learn [3,2] - there's no Pit there!
KB learn [1,2] - there's no Pit there!
KB learn [2,3] - there's no gold here!
KB learn [2,1] - there's no gold here!
KB learn [3,2] - there's no gold here!
KB learn [1,2] - there's no gold here!
ask_KB VisitedList=[[2,2],[1,2],[1,1]] - Action=_60100
agent_location=[2,2]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
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L is permitted= [1,1]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
L was not visited before= [2,3]
L=[2,3] is adjacent to AL_=[2,2]
New Agent Location: [2,3]
Assume L as the new location= [2,3]
I'm going to: [2,3]
New time: 4
New score: -4
VisitedList = [[2,3],[2,2],[1,2],[1,1]]
There's still something to do...



New Round: [[2,3],[2,2],[1,2],[1,1]]
I'm in [2,3], seeing: [no,yes,no]
KB learn [2,4] - no Wumpus there!
KB learn [2,2] - no Wumpus there!
KB learn [3,3] - no Wumpus there!
KB learn [1,3] - no Wumpus there!
KB learn [2,4] - its a Pit!
KB learn [2,2] - its a Pit!
KB learn [3,3] - its a Pit!
KB learn [1,3] - its a Pit!
KB learn [2,4] - there's no gold here!
KB learn [2,2] - there's no gold here!
KB learn [3,3] - there's no gold here!
KB learn [1,3] - there's no gold here!
ask_KB VisitedList=[[2,3],[2,2],[1,2],[1,1]] - Action=_77442
agent_location=[2,3]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
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There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,4]
There is no Wumpus in L= [2,2]
There is no Wumpus in L= [3,3]
There is no Wumpus in L= [1,3]
I'm in [2,3], seeing: [no,yes,no]
KB learn [2,4] - no Wumpus there!
KB learn [2,2] - no Wumpus there!
KB learn [3,3] - no Wumpus there!
KB learn [1,3] - no Wumpus there!
KB learn [2,4] - its a Pit!
KB learn [2,2] - its a Pit!
KB learn [3,3] - its a Pit!
KB learn [1,3] - its a Pit!
KB learn [2,4] - there's no gold here!
KB learn [2,2] - there's no gold here!
KB learn [3,3] - there's no gold here!
KB learn [1,3] - there's no gold here!
ask_KB VisitedList=[[2,3],[2,2],[1,2],[1,1]] - Action=_77442
agent_location=[2,3]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [2,1]
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There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,4]
There is no Wumpus in L= [2,2]
There is no Wumpus in L= [3,3]
There is no Wumpus in L= [1,3]
I'm in [2,3], seeing: [no,no,no]
KB learn [2,4] - no Wumpus there!
KB learn [2,2] - no Wumpus there!
KB learn [3,3] - no Wumpus there!
KB learn [1,3] - no Wumpus there!
KB learn [2,4] - there's no Pit there!
KB learn [2,2] - there's no Pit there!
KB learn [3,3] - there's no Pit there!
KB learn [1,3] - there's no Pit there!
KB learn [2,4] - there's no gold here!
KB learn [2,2] - there's no gold here!
KB learn [3,3] - there's no gold here!
KB learn [1,3] - there's no gold here!
ask_KB VisitedList=[[2,3],[2,2],[1,2],[1,1]] - Action=_77450
agent_location=[2,3]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
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There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,4]
There is no Pit in L= [2,4]
L is permitted= [2,4]
L was not visited before= [2,4]
L=[2,4] is adjacent to AL_=[2,3]
New Agent Location: [2,4]
Assume L as the new location= [2,4]
I'm going to: [2,4]
New time: 5
New score: -5
VisitedList = [[2,4],[2,3],[2,2],[1,2],[1,1]]
There's still something to do...




New Round: [[2,4],[2,3],[2,2],[1,2],[1,1]]
I'm in [2,4], seeing: [no,no,no]
KB learn [2,5] - no Wumpus there!
KB learn [2,3] - no Wumpus there!
KB learn [3,4] - no Wumpus there!
KB learn [1,4] - no Wumpus there!
KB learn [2,5] - there's no Pit there!
KB learn [2,3] - there's no Pit there!
KB learn [3,4] - there's no Pit there!
KB learn [1,4] - there's no Pit there!
KB learn [2,5] - there's no gold here!
KB learn [2,3] - there's no gold here!
KB learn [3,4] - there's no gold here!
KB learn [1,4] - there's no gold here!
ask_KB VisitedList=[[2,4],[2,3],[2,2],[1,2],[1,1]] - Action=_94824
agent_location=[2,4]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
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There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,4]
There is no Pit in L= [2,4]
L is permitted= [2,4]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [3,3]
There is no Pit in L= [3,3]
L is permitted= [3,3]
L was not visited before= [3,3]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
L was not visited before= [3,4]
L=[3,4] is adjacent to AL_=[2,4]
New Agent Location: [3,4]
Assume L as the new location= [3,4]
I'm going to: [3,4]
New time: 6
New score: -6
VisitedList = [[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
There's still something to do...


New Round: [[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
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I'm in [3,4], seeing: [no,yes,no]
KB learn [3,5] - no Wumpus there!
KB learn [3,3] - no Wumpus there!
KB learn [4,4] - no Wumpus there!
KB learn [2,4] - no Wumpus there!
KB learn [3,5] - its a Pit!
KB learn [3,3] - its a Pit!
KB learn [4,4] - its a Pit!
KB learn [2,4] - its a Pit!
KB learn [3,5] - there's no gold here!
KB learn [3,3] - there's no gold here!
KB learn [4,4] - there's no gold here!
KB learn [2,4] - there's no gold here!
ask_KB VisitedList=[[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]] - Action=_112218
agent_location=[3,4]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
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L is permitted= [2,3]
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
L was not visited before= [1,4]
There is no Wumpus in L= [3,5]
There is no Wumpus in L= [3,3]
There is no Wumpus in L= [4,4]
There is no Wumpus in L= [2,4]
I'm in [3,4], seeing: [no,yes,no]
KB learn [3,5] - no Wumpus there!
KB learn [3,3] - no Wumpus there!
KB learn [4,4] - no Wumpus there!
KB learn [2,4] - no Wumpus there!
KB learn [3,5] - its a Pit!
KB learn [3,3] - its a Pit!
KB learn [4,4] - its a Pit!
KB learn [2,4] - its a Pit!
KB learn [3,5] - there's no gold here!
KB learn [3,3] - there's no gold here!
KB learn [4,4] - there's no gold here!
KB learn [2,4] - there's no gold here!
ask_KB VisitedList=[[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]] - Action=_112218
agent_location=[3,4]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
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L is permitted= [1,2]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
L was not visited before= [1,4]
There is no Wumpus in L= [3,5]
There is no Wumpus in L= [3,3]
There is no Wumpus in L= [4,4]
There is no Wumpus in L= [2,4]
I'm in [3,4], seeing: [no,no,no]
KB learn [3,5] - no Wumpus there!
KB learn [3,3] - no Wumpus there!
KB learn [4,4] - no Wumpus there!
KB learn [2,4] - no Wumpus there!
KB learn [3,5] - there's no Pit there!
KB learn [3,3] - there's no Pit there!
KB learn [4,4] - there's no Pit there!
KB learn [2,4] - there's no Pit there!
KB learn [3,5] - there's no gold here!
KB learn [3,3] - there's no gold here!
KB learn [4,4] - there's no gold here!
KB learn [2,4] - there's no gold here!
ask_KB VisitedList=[[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]] - Action=_112226
agent_location=[3,4]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
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There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
L was not visited before= [1,4]
There is no Wumpus in L= [3,5]
There is no Pit in L= [3,5]
There is no Wumpus in L= [3,3]
There is no Pit in L= [3,3]
L is permitted= [3,3]
L was not visited before= [3,3]
L=[3,3] is adjacent to AL_=[3,4]
New Agent Location: [3,3]
Assume L as the new location= [3,3]
I'm going to: [3,3]
New time: 7
New score: -7
VisitedList = [[3,3],[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
Agent was fallen into a pit!
```

```
There is no Wumpus in L= [4,4]
There is no Pit in L= [4,4]
L is permitted= [4,4]
L was not visited before= [4,4]
L=[4,4] is adjacent to AL_=[3,4]
New Agent Location: [4,4]
Assume L as the new location= [4,4]
I'm going to: [4,4]
New time: 8
New score: -8
VisitedList = [[4,4],[3,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
Agent was fallen into a pit!
There is no Wumpus in L= [2,4]
There is no Pit in L= [2,4]
L is permitted= [2,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
L was not visited before= [1,4]
L=[1,4] is adjacent to AL_=[2,4]
New Agent Location: [1,4]
Assume L as the new location= [1,4]
I'm going to: [1,4]
New time: 9
New score: -9
VisitedList = [[1,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
There's still something to do...



New Round: [[1,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
I'm in [1,4], seeing: [no,yes,no]
KB learn [1,5] - no Wumpus there!
KB learn [1,3] - no Wumpus there!
KB learn [2,4] - no Wumpus there!
KB learn [0,4] - no Wumpus there!
KB learn [1,5] - its a Pit!
KB learn [1,3] - its a Pit!
KB learn [2,4] - its a Pit!
KB learn [0,4] - its a Pit!
KB learn [1,5] - there's no gold here!
KB learn [1,3] - there's no gold here!
KB learn [2,4] - there's no gold here!
KB learn [0,4] - there's no gold here!
ask_KB VisitedList=[[1,4],[2,4],[2,3],[2,2],[1,2],[1,1]] - Action=_112218
agent_location=[1,4]
```

```
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
L was not visited before= [3,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
There is no Wumpus in L= [3,5]
There is no Pit in L= [3,5]
There is no Wumpus in L= [3,3]
There is no Pit in L= [3,3]
L is permitted= [3,3]
L was not visited before= [3,3]
There is no Wumpus in L= [4,4]
There is no Pit in L= [4,4]
L is permitted= [4,4]
L was not visited before= [4,4]
There is no Wumpus in L= [1,5]
```

```
There is no Wumpus in L= [1,3]
There is no Wumpus in L= [2,4]
There is no Wumpus in L= [0,4]
I'm in [1,4], seeing: [no,no,no]
KB learn [1,5] - no Wumpus there!
KB learn [1,3] - no Wumpus there!
KB learn [2,4] - no Wumpus there!
KB learn [0,4] - no Wumpus there!
KB learn [1,5] - there's no Pit there!
KB learn [1,3] - there's no Pit there!
KB learn [2,4] - there's no Pit there!
KB learn [0,4] - there's no Pit there!
KB learn [1,5] - there's no gold here!
KB learn [1,3] - there's no gold here!
KB learn [2,4] - there's no gold here!
KB learn [0,4] - there's no gold here!
ask_KB VisitedList=[[1,4],[2,4],[2,3],[2,2],[1,2],[1,1]] - Action=_112226
agent_location=[1,4]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
```

```
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
L was not visited before= [3,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
There is no Wumpus in L= [3,5]
There is no Pit in L= [3,5]
There is no Wumpus in L= [3,3]
There is no Pit in L= [3,3]
L is permitted= [3,3]
L was not visited before= [3,3]
There is no Wumpus in L= [4,4]
There is no Pit in L= [4,4]
L is permitted= [4,4]
L was not visited before= [4,4]
There is no Wumpus in L= [1,5]
There is no Pit in L= [1,5]
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
L=[1,3] is adjacent to AL_=[1,4]
New Agent Location: [1,3]
Assume L as the new location= [1,3]
I'm going to: [1,3]
New time: 10
New score: -10
VisitedList = [[1,3],[1,4],[2,4],[2,3],[2,2],[1,2],[1,1]]
Agent was fallen into a pit!
There is no Wumpus in L= [2,4]
There is no Pit in L= [2,4]
L is permitted= [2,4]
There is no Wumpus in L= [0,4]
There is no Pit in L= [0,4]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [3,3]
There is no Pit in L= [3,3]
L is permitted= [3,3]
L was not visited before= [3,3]
L=[3,3] is adjacent to AL_=[2,3]
New Agent Location: [3,3]
Assume L as the new location= [3,3]
```

```
I'm going to: [3,3]
New time: 11
New score: -11
VisitedList = [[3,3],[2,3],[2,2],[1,2],[1,1]]
Agent was fallen into a pit!
There is no Wumpus in L= [1,3]
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
L=[1,3] is adjacent to AL_=[2,3]
New Agent Location: [1,3]
Assume L as the new location= [1,3]
I'm going to: [1,3]
New time: 12
New score: -12
VisitedList = [[1,3],[2,3],[2,2],[1,2],[1,1]]
Agent was fallen into a pit!
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
L was not visited before= [2,1]
L=[2,1] is adjacent to AL_=[2,2]
New Agent Location: [2,1]
Assume L as the new location= [2,1]
I'm going to: [2,1]
New time: 13
New score: -13
VisitedList = [[2,1],[2,2],[1,2],[1,1]]
There's still something to do...




New Round: [[2,1],[2,2],[1,2],[1,1]]
I'm in [2,1], seeing: [yes,no,no]
I'm in [2,1], seeing: [no,no,no]
KB learn [2,2] - no Wumpus there!
KB learn [2,0] - no Wumpus there!
KB learn [3,1] - no Wumpus there!
KB learn [1,1] - no Wumpus there!
KB learn [2,2] - there's no Pit there!
KB learn [2,0] - there's no Pit there!
KB learn [3,1] - there's no Pit there!
KB learn [1,1] - there's no Pit there!
KB learn [2,2] - there's no gold here!
KB learn [2,0] - there's no gold here!
KB learn [3,1] - there's no gold here!
```

```
KB learn [1,1] - there's no gold here!
ask_KB VisitedList=[[2,1],[2,2],[1,2],[1,1]] - Action=_77452
agent_location=[2,1]
There is no Wumpus in L= [1,0]
There is no Pit in L= [1,0]
There is no Wumpus in L= [0,1]
There is no Pit in L= [0,1]
There is no Wumpus in L= [0,2]
There is no Pit in L= [0,2]
There is no Wumpus in L= [2,1]
There is no Pit in L= [2,1]
L is permitted= [2,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
There is no Wumpus in L= [1,2]
There is no Pit in L= [1,2]
L is permitted= [1,2]
There is no Wumpus in L= [2,5]
There is no Pit in L= [2,5]
There is no Wumpus in L= [2,3]
There is no Pit in L= [2,3]
L is permitted= [2,3]
L was not visited before= [2,3]
There is no Wumpus in L= [3,4]
There is no Pit in L= [3,4]
L is permitted= [3,4]
L was not visited before= [3,4]
There is no Wumpus in L= [1,4]
There is no Pit in L= [1,4]
L is permitted= [1,4]
L was not visited before= [1,4]
There is no Wumpus in L= [3,5]
There is no Pit in L= [3,5]
There is no Wumpus in L= [3,3]
There is no Pit in L= [3,3]
L is permitted= [3,3]
L was not visited before= [3,3]
There is no Wumpus in L= [4,4]
There is no Pit in L= [4,4]
L is permitted= [4,4]
L was not visited before= [4,4]
There is no Wumpus in L= [1,5]
There is no Pit in L= [1,5]
There is no Wumpus in L= [1,3]
```

```
There is no Pit in L= [1,3]
L is permitted= [1,3]
L was not visited before= [1,3]
There is no Wumpus in L= [2,4]
There is no Pit in L= [2,4]
L is permitted= [2,4]
L was not visited before= [2,4]
There is no Wumpus in L= [0,4]
There is no Pit in L= [0,4]
There is no Wumpus in L= [2,2]
There is no Pit in L= [2,2]
L is permitted= [2,2]
There is no Wumpus in L= [2,0]
There is no Pit in L= [2,0]
There is no Wumpus in L= [3,1]
There is no Pit in L= [3,1]
L is permitted= [3,1]
L was not visited before= [3,1]
L=[3,1] is adjacent to AL_=[2,1]
New Agent Location: [3,1]
Assume L as the new location= [3,1]
I'm going to: [3,1]
New time: 14
New score: -14
VisitedList = [[3,1],[2,1],[2,2],[1,2],[1,1]]
YIKES! You're eaten by the wumpus!There's still something to do...
Lost: Wumpus eats you!
Score: -14,
 Time: 14
```

 true *1*

0.217 seconds cpu time

```
There is no Wumpus in L= [1,1]
There is no Pit in L= [1,1]
L is permitted= [1,1]
There is no Wumpus in L= [3,2]
There is no Pit in L= [3,2]
L is permitted= [3,2]
L was not visited before= [3,2]
L=[3,2] is adjacent to AL_=[2,2]
New Agent Location: [3,2]
Assume L as the new location= [3,2]
I'm going to: [3,2]
New time: 15
New score: 986
VisitedList = [[3,2],[2,2],[1,2],[1,1]]
AGENT FOUND THE GOLD!!WON!
```

Score: 986,
 Time: 15
true

| Next | 10 | 100 | 1,000 | Stop |

2

```prolog
1  %--------------------------------------------------------------
2  % A Prolog Implementation of the Wumpus World based on the
3  % work developed by Richard O. Legendi
4  % https://github.com/rlegendi/wumpus-prolog/
5  %
6  % - Alexandre Dietrich
7  % - Patrick Chabelski
8  % - Rodolfo Vasconcelos
9  %
10 % SCS 3547 – Intelligent Agents & Reinforcement Learning
11 %
12 % UNIVERSITY OF TORONTO - SCHOOL OF CONTINUING STUDIES
13 %
14 % Instructor: Larry Simon
15 %
16 % July, 5th, 2020
17 %
18 % Usage:
19 % consult this file
20 % ?-start.
21 %
22 %--------------------------------------------------------------
23
24
25 %--------------------------------------------------------------
26 % Declaring dynamic methods
27
28 :- dynamic ([
```