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**CSC 4301 (01) – into to AI**



















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**WUMPUS GAME LOGICAL AGENT:**

### **Introduction:**

During this project, we created an intelligent agent to solve some of the game Wumpus World's problems. The game involves a hunter traversing a four-by-four arrangement of chambers with the primary goal of locating the Wumpus and a secondary goal of locating the gold. During his exploration, he must be wary of the deadly pits and avoid being the prey rather than the hunter, and being eaten by the Wumpus.

To fulfill this goal, we must use Prolog to implement the game as well as all of the inference rules, here are some situations when the agent won the game, failed the game, as well as the problem that I faced:






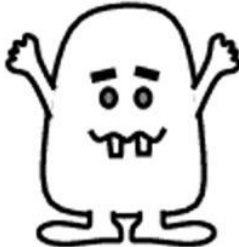






			
	 		
		 	
 START	 		

```

?- start.
I am in [1,1]
I am in [2,1]
there is a breeze in [2,1]
there is a stench in [2,1]
I am in [1,1]
I am in [1,2]
there is a stench in [1,2]
I am in [2,2]
I am in [3,2]
there is a breeze in [3,2]
there is a breeze in [3,2]
there is a stench in [3,2]
I am in [2,2]
I am in [2,3]
there is a breeze in [2,3]
there is a stench in [2,3]
The wumpus is located in [0,2]! I am shooting my bullet!
Score: 22
timer: 8
WON!
true.

```

- Here, the Wampus started at [1,1], then it goes to [2, 1], it finds a breeze an stench at [2,1], then it goes back to [1,1] and then to [1,2], it founds a stench at [1,2], he continues to [2,2] (*normally here he should shoot to wampus but I didn't know where it missed up*).














 			
	 		 
			
 START			

```

?- start.
I am in [1,1]
I am in [2,1]
I am in [1,1]
I am in [1,2]
there is a stench in [1,2]
I am in [2,1]
I am in [3,1]
I am in [1,2]
there is a stench in [1,2]
I am in [2,2]
I am in [3,1]
I am in [4,1]
I am in [2,2]
I am in [3,2]
I am in [2,2]
I am in [2,3]
there is a breeze in [2,3]
there is a stench in [2,3]
I am in [3,2]
I am in [4,2]
I am in [2,3]
there is a breeze in [2,3]
there is a stench in [2,3]
I am in [3,3]
I am in [4,3]
there is a breeze in [4,3]
I have found GOLD, Score is now 511
I am in [3,3]
I am in [3,4]
there is a breeze in [3,4]
there is a breeze in [3,4]
The wumpus is located in [1,3]! I am shooting my bullet!
Score: 509
timer: 21
WON!
true.

```

- Here, the Wampus started at [1,1], then it goes to [2, 1], it found nothing then it came back to [1,1] then to [1,2], it founds a stench at [1, 2], then it continues its way to [2,2], while exploring it went to [3,1], [4,1], [2,2], [3,2], [2,2] and [2,3], it founds a breeze and a stench at [2,3], he continues to [3,2] then [4,2] then [2,3], he found again a breeze and a stench in [2,3], then an empty [3,3], then a breeze in [4,3] and he found the gold also there, he went back to where the wampus is, in [1,3], he shot it with bullet and the agent won.














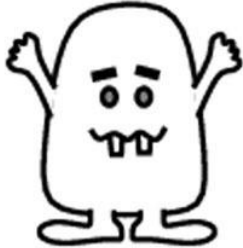


			
			 
		 	
 START			

```

?- start.
I am in [1,1]
I am in [2,1]
there is a breeze in [2,1]
I am in [1,1]
I am in [1,2]
there is a breeze in [1,2]
I am in [2,1]
there is a breeze in [2,1]
I am in [3,1]
I am in [4,1]
there is a stench in [4,1]
I am in [3,1]
I am in [3,2]
there is a breeze in [3,2]
there is a stench in [3,2]
I am in [2,2]
I am in [2,3]
there is a breeze in [2,3]
I am in [1,3]
I have found GOLD, Score is now 518
I am in [1,4]
I am in [2,4]
I am in [3,4]
there is a breeze in [3,4]
The wumpus is located in [4,2]! I am shooting my bullet!
Score: 515
timer: 15
WON!
true.

```

- With the same process as before, the agent won again without any problems at this situation and the following situation as well:

			
 			 
		 	
 START			

















```

?- start.
I am in [1,1]
there is a breeze in [1,1]
I am in [2,1]
I am in [3,1]
there is a breeze in [3,1]
I am in [2,1]
I am in [2,2]
there is a breeze in [2,2]
I am in [1,2]
I am in [1,3]
there is a breeze in [1,3]
I have found GOLD, Score is now 523
I am in [3,1]
there is a breeze in [3,1]
I am in [4,1]
there is a stench in [4,1]
I am in [2,2]
there is a breeze in [2,2]
I am in [3,2]
there is a stench in [3,2]
I am in [1,3]
there is a breeze in [1,3]
I have found GOLD, Score is now 1018
I am in [2,3]
I am in [3,3]
I am in [2,3]
I am in [2,4]
there is a breeze in [2,4]
I am in [3,3]
I am in [4,3]
there is a breeze in [4,3]
there is a stench in [4,3]
I am in [2,4]
there is a breeze in [2,4]
I am in [3,4]
there is a breeze in [3,4]
The wumpus is located in [4,2]! I am shooting my bullet!
Score: 1010
timer: 20
WON!
true.

```

- At the next situation, the agent had failed in capturing the wampus even if he found the gold:


















	 	 	
			 
			
 <p>START</p>			

```

?- start.
I am in [1,1]
I am in [2,1]
there is a breeze in [2,1]
I am in [1,1]
I am in [1,2]
I am in [2,2]
I am in [1,2]
I am in [1,3]
there is a breeze in [1,3]
I am in [2,2]
I am in [3,2]
there is a breeze in [3,2]
there is a breeze in [3,2]
I am in [1,3]
there is a breeze in [1,3]
I am in [2,3]
there is a breeze in [2,3]
I am in [3,2]
there is a breeze in [3,2]
there is a breeze in [3,2]
I am in [4,2]
I am in [4,3]
there is a breeze in [4,3]
there is a stench in [4,3]
I am in [4,2]
I am in [4,1]
there is a breeze in [4,1]
I am in [4,3]
there is a breeze in [4,3]
there is a stench in [4,3]
I am in [3,3]
I am in [3,4]
there is a breeze in [3,4]
there is a stench in [3,4]
I am in [2,4]
there is a breeze in [2,4]
I have found GOLD, Score is now 510
The agent failed to find the Wumpus
FAILED !
true.

```

- And at this last situation, we faced the same problem as the first one, where the output told us that the wampus is on [3,0], but there is no [3,0] in the grid:

			 
		 	
			 
 START			

```
?- start.  
I am in [1,1]  
I am in [2,1]  
I am in [1,1]  
I am in [1,2]  
there is a breeze in [1,2]  
I am in [2,1]  
I am in [3,1]  
there is a stench in [3,1]  
I am in [1,2]  
there is a breeze in [1,2]  
I am in [2,2]  
there is a stench in [2,2]  
I am in [3,1]  
there is a stench in [3,1]  
I am in [4,1]  
I am in [4,2]  
there is a breeze in [4,2]  
there is a stench in [4,2]  
I am in [3,2]  
I am in [3,3]  
there is a breeze in [3,3]  
there is a stench in [3,3]  
The wumpus is located in [3,0]! I am shooting my bullet!  
Score: 17  
timer: 13  
WON!  
true.
```