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20MAI0073

Exercise -5

Solving Wumpus Problem using Logic

```
import pandas as pd
notations= {"A":"Agent","W":"Wumpus","P":"Pit",
            "S":"Stench/Smell","B":"Breeze",
            "G":"Gold","OK":"Safe","SBG":"Smell Breeze and gold",
            "SG":"Smell and gold","SB":"Smell and Breeze",
            "BG":"Breeze and gold"}
wumpus_map=pd.DataFrame([[0,notations["B"],notations["P"],notations["B"]],
                        [notations["SB"],0,notations["B"],0],
                        [notations["W"],notations["SBG"],notations["P"],notations["B"]],
                        [0,0,notations["B"],notations["P"]]][::-1])

movements,travel_possible_row,travel_possible_cols=[[-1,-1]],0,0
wumpus_map_copy=wumpus_map.copy()
i,j=0,0
while movements[-1]!=[1,2]:
    if (i==0 and j==0):
        i,j=0,1
        if wumpus_map_copy[j][i] == "Breeze":
            wumpus_map_copy[j][i]=wumpus_map_copy[j][i] + " + Agent"
            print(wumpus_map_copy)
            print("\ncannot move ahead as there is a breeze and pit might be there\n")
            wumpus_map_copy=wumpus_map.copy()
            wumpus_map_copy[j-1][i]="Agent"
            travel_possible_cols=i
            print(wumpus_map_copy)
            i,j=0,1
        elif wumpus_map_copy[i][j]=="Smell and Breeze":
            wumpus_map_copy=wumpus_map.copy()
            wumpus_map_copy[i][j]=wumpus_map_copy[i][j]+" + Agent"
            print(wumpus_map_copy)
            wumpus_map_copy[i][j]=wumpus_map[i][j]
            movements.append([i,j])
            i,j=1,1
        elif wumpus_map_copy[i][j]==0:
            if wumpus_map_copy[i][j]==0:
                wumpus_map_copy[i][j]="Agent"
            else:
                wumpus_map_copy[i][j]=str(wumpus_map_copy[i+1][j])+" + Agent"
            print(wumpus_map_copy)
```

```

wumpus_map_copy=wumpus_map.copy()
i,j=1,2
elif wumpus_map_copy[i][j]=="Smell Breeze and gold":
    wumpus_map_copy[i][j]=str(wumpus_map_copy[i][j])+" + Agent"
    print("gold achieved")
    print(wumpus_map_copy)
    movements.append([i,j])
    i,j=1,1
else:
    print("trying new way...")
    break
print("Agent Returning back to starting point")
while True:
    if wumpus_map_copy[i][j]==0:
        if wumpus_map_copy[i][j]==0:
            wumpus_map_copy[i][j]="Agent"
        else:
            wumpus_map_copy[i][j]=str(wumpus_map_copy[i+1][j])+" + Agent"
        print(wumpus_map_copy)
        wumpus_map_copy=wumpus_map.copy()
        i,j=0,1
    elif wumpus_map_copy[i][j]=="Smell and Breeze":
        wumpus_map_copy=wumpus_map.copy()
        wumpus_map_copy[i][j]=wumpus_map_copy[i][j]+" + Agent"
        print(wumpus_map_copy)
        wumpus_map_copy[i][j]=wumpus_map[i][j]
        movements.append([i,j])
        i,j=0,0
        wumpus_map_copy=wumpus_map.copy()
        wumpus_map_copy[0][0]="Agent"
        print(wumpus_map_copy)
    else:
        break

```

*****OUTPUT*****

```

Inbox (98) - prekshitavpatil@gmail.com x Desktop/python/ x wampus - Jupyter Notebook x +
localhost:8888/notebooks/Desktop/python/wampus.py
Jupyter wampus Last Checkpoint: an hour ago (unsaved changes)
File Edit View Insert Cell Kernel Widgets Help Trusted Python 3
Run Code
3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold Pit Breeze
1 Smell and Breeze 0 Breeze 0
0      0      Breeze + Agent Pit Breeze

cannot move ahead as there is a breeze and pit might be there

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold Pit Breeze
1 Smell and Breeze 0 Breeze 0
0      Agent      Breeze Pit Breeze

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold Pit Breeze
1 Smell and Breeze + Agent 0 Breeze 0
0      0      Breeze Pit Breeze

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold Pit Breeze
1 Smell and Breeze Agent Breeze 0
0      0      Breeze Pit Breeze

gold achieved

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold + Agent Pit Breeze
1 Smell and Breeze 0 Breeze 0
0      0      Breeze Pit Breeze

Agent Returning back to starting point

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold + Agent Pit Breeze
1 Smell and Breeze Agent Breeze 0
0      0      Breeze Pit Breeze

```

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Jupyter wampus Last Checkpoint: an hour ago (unsaved changes)
File Edit View Insert Cell Kernel Widgets Help Trusted Python 3
Run Code
1 Smell and Breeze + Agent 0 Breeze 0
0      0      Breeze Pit Breeze

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold Pit Breeze
1 Smell and Breeze Agent Breeze 0
0      0      Breeze Pit Breeze

gold achieved

3      0      1      2      3
3      0      0 Breeze Pit
2      Wumpus Smell Breeze and gold + Agent Pit Breeze
1 Smell and Breeze 0 Breeze 0
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Agent Returning back to starting point

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0      0      Breeze Pit Breeze

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0      Agent      Breeze Pit Breeze

```