

Lab - 02

01/10/2024

write a program for implementation of a AI controlled vacuum cleaner.

Algorithms:

Step 1: Create two rooms A and B

Step 2: Take input from the user

whether the room is clean or dirty. i.e., clean → C & dirty → D

Step 3: Initialize both the rooms are dirty initially.

Step 4:- The vacuum cleaner agent is in room A : checks if it is dirty if yes - cleans if not then A → cleaned and moves right i.e., next room B.

def check\_if\_clean(vac): (i.e., A(D))  
while (true):

If room A == D;

clean(vac):

else

move(vac)

end .

end def.

→ If the room A is in status dirty, the loop executes implementing clean(A); if & else the agent will move to the next room i.e. to its right and again checks the room's status.

if  $B == D$ :

clean B:

else

~~move(A)~~

→ If both of them are cleaned then it breaks the loop

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→ Program:

```
print("0 - dirty and 1 - clean")
```

```
roomA = int(input("Enter status for  
room A:"))
```

```
roomB = int(input("Enter status for  
room B:"))
```

```
def clean(room, RoomName):
```

```
    if cleanRoom == 0:
```

```
        room = 1
```

```
        print(RoomName + " cleaned")
```

```
return Room
```

```
def move_agent(RoomA, RoomB):
    print("The Agent is in Room A")
    if RoomA == 0:
        RoomA = clean(RoomA, "Room A")
    else:
        print("Room A already cleaned")
    print("The Agent is moving to Room B")
    if RoomB == 0:
        RoomB = clean(RoomB, "Room B")
    else:
        print("Room B already cleaned")
    if RoomA == 1 and RoomB == 1:
        print("The Agent is moving back to check rooms again")
        move_agent(RoomA, RoomB)
```

move\_agent (RoomA, RoomB).

Output:

0 - dirty and 1 - clean  
Enter status for room A : 0  
Enter status for room B : 1

Agent is in Room A  
Room A is cleaned

Agent is moving to Room B  
Room B already cleaned  
Both rooms are cleaned

Ans  
why

Output for 4 rooms:

```
def move_agent(rooms):
    for i in range(len(rooms)):
        print("In Agent is in room"
              + str(i+1))
        if rooms[i] == 0:
            rooms = clean(rooms, i,
                           "Room " + str(i+1))
        else:
            print("Room " + str(i+1) + " already"
                  + " cleaned")
```

if all rooms == 1 for room in room:  
 print ("In All rooms are cleaned")  
 else:

print ("In Agent is moving"
 back to check rooms again")
 move\_agent(rooms)

Output -

0 - dirty & 1 - clean

Enter the no. of rooms: 4

Enter the status for Room 1: 1

Enter the starting for room 2: 0

Enter status for Room 3: 0

Enter status for Room 4: 1

Agent is in room  
 Room 1 is already cleaned

Agent is in room 2  
Room 2 cleaned

Agent 1 is in room 3  
Room 3 cleaned

Agent 2 is in room 4  
Room 4 already cleaned.