

Experiment 6: Vacuum Bot Program

Aim:

Implement an Algorithm in Python for solving Vacuum-Bot Problem.

Python Program:

```
import random
from pprint import pprint
def display(room):
    pprint(room)

room = [
    [1, 1, 1, 1],
    [1, 1, 1, 1],
    [1, 1, 1, 1],
    [1, 1, 1, 1],
]

x = 0
y = 0

while x < 4:
    while y < 4:
        room[x][y] = random.choice([0,1,1])
        y+=1
    x+=1
    y=0

print("Environment (dirt=1/cleaned=0):")
display(room)
x = 0
y = 0
z = 0
while x < 4:
    while y < 4:
        print("Current Location:",(x,y))
        if room[x][y] == 1:
            print(f"Dirt Found, Cleaning this location: {(x, y)}")
            room[x][y] = 0
        y+=1
    x+=1
    y=0

print("Room has been cleaned successfully")
display(room)
```

Output:

Environment (dirt=1/cleaned=0):
[[1, 1, 1, 1], [0, 0, 0, 0], [1, 1, 0, 1], [1, 0, 0, 1]]
Current Location: (0, 0)
Dirt Found, Cleaning this location:(0, 0)
Current Location: (0, 1)
Dirt Found, Cleaning this location:(0, 1)
Current Location: (0, 2)
Dirt Found, Cleaning this location:(0, 2)
Current Location: (0, 3)
Dirt Found, Cleaning this location:(0, 3)
Current Location: (1, 0)
Current Location: (1, 1)
Current Location: (1, 2)
Current Location: (1, 3)
Current Location: (2, 0)
Dirt Found, Cleaning this location:(2, 0)
Current Location: (2, 1)
Dirt Found, Cleaning this location:(2, 1)
Current Location: (2, 2)
Current Location: (2, 3)
Dirt Found, Cleaning this location:(2, 3)
Current Location: (3, 0)
Dirt Found, Cleaning this location:(3, 0)
Current Location: (3, 1)
Current Location: (3, 2)
Current Location: (3, 3)
Dirt Found, Cleaning this location:(3, 3)
Room has been cleaned successfully
[[0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0], [0, 0, 0, 0]]

Result:

Code has been Implemented successfully.