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Lab – 2 Vacuum World Cleaner

Code:

```
import numpy as np
print("----Vacuum  Cleaner-----")
Goal_state = {'A':0 , 'B': 0}
Curr_state = {'A': 0  , 'B': 0}
r = (input("Enter robot position (A-B): "))
Curr_state['A'] = int(input("Enter 0 or 1 for dust in  position A: "))
Curr_state['B'] = int(input("Enter 0 or 1 for dust in position B: "))
c = 0
print("-----------------")
def suck(loc, c):
    print(f"Location {loc} is dirty")
    print("Suck operation done")
    print(f"Position  {loc} is cleaned")
    c += 1
    print("Cost =", c)
    Curr_state[loc] = 0
    print("-----------------")
    return c

def left():
    print("Position B is clean")
    print("Moving Left")
    print("-----------------")
    return 'A'
```

```
def right():
    print("Position A is clean")
    print("Moving Right")
    print("-----------------")
    return 'B'

def vacuum_cleaner(loc, sta, c):
    if sta == 1:
        c = suck(loc, c)
    elif loc == 'A':
        loc = right()
    elif loc == 'B':
        loc = left()
    return loc, c

while True:
    print("Robot location ",r)
    sta = Curr_state[r]
    r, c = vacuum_cleaner(r, sta, c)

    if (Goal_state==Curr_state):
        print("All positions are clean!")
        print("Goal state")
        print(Goal_state)
        print("Total cost is ",c)
        break
```

Output:

```
----Vacuum  Cleaner-----
Enter robot position (A-B): B
Enter 0 or 1 for dust in  position A: 1
Enter 0 or 1 for dust in position B: 1
-----------------
Robot location  B
Location B is dirty
Suck operation done
Position  B is cleaned
Cost = 1
-----------------
Robot location  B
Position B is clean
Moving Left
-----------------
Robot location  A
Location A is dirty
Suck operation done
Position  A is cleaned
Cost = 2
-----------------
All positions are clean!
Goal state
{'A': 0, 'B': 0}
Total cost is  2
```