

```
# Vacuum Cleaner Problem for Two Quadrants
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```
# Function to print current status and goal state
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```
def vacuum_cleaner():
```

```
    # Initial states: room 'A' or 'B', status of room A and B (0 - no dust, 1 - dust)
```

```
    room_A_status = int(input("Enter the status of room A (0 for no dust, 1 for dust): "))
```

```
    room_B_status = int(input("Enter the status of room B (0 for no dust, 1 for dust): "))
```

```
    location = input("Enter the current vacuum location (A or B): ")
```

```
    # Goal state (Both rooms should be clean)
```

```
    goal_state = ['A', 0, 'B', 0]
```

```
    cost = 0
```

```
    # Check if the vacuum is in room A
```

```
    if location == 'A':
```

```
        print("Vacuum is placed in Location A")
```

```
        if room_A_status == 1:
```

```
            print("Location A is Dirty")
```

```
            print("Location A has been Cleaned")
```

```
            room_A_status = 0
```

```
            cost += 1 # Adding cost for SUCK operation
```

```
            print(f"COST for SUCK: {cost}")
```

```
        else:
```

```
            print("Location A is already clean")
```

```
    print("Moving right to the Location B")
```

```
    # Now move to room B and check its status
```

```
    if room_B_status == 1:
```

```
        print("Location B is Dirty")
```

```
    print("Location B has been Cleaned")

    room_B_status = 0

    cost += 1 # Adding cost for SUCK operation

    print(f"COST for SUCK: {cost}")

else:

    print("Location B is already clean")


# Check if the vacuum is in room B
elif location == 'B':

    print("Vacuum is placed in Location B")

    if room_B_status == 1:

        print("Location B is Dirty")

        print("Location B has been Cleaned")

        room_B_status = 0

        cost += 1 # Adding cost for SUCK operation

        print(f"COST for SUCK: {cost}")

    else:

        print("Location B is already clean")


print("Moving left to the Location A")


# Now move to room A and check its status
if room_A_status == 1:

    print("Location A is Dirty")

    print("Location A has been Cleaned")

    room_A_status = 0

    cost += 1 # Adding cost for SUCK operation

    print(f"COST for SUCK: {cost}")

else:

    print("Location A is already clean")
```

```
# Final goal state

current_state = ['A', room_A_status, 'B', room_B_status]

print(f"Final Goal State: {current_state}")

print(f"Total Cost: {cost}")
```

Run the vacuum cleaner simulation

```
vacuum_cleaner()
```

```
Enter the status of room A (0 for no dust, 1 for dust): 1
Enter the status of room B (0 for no dust, 1 for dust): 1
Enter the current vacuum location (A or B): A
Vacuum is placed in Location A
Location A is Dirty
Location A has been Cleaned
COST for SUCK: 1
Moving right to Location B
COST for moving to Location B: 2
Location B is Dirty
Location B has been Cleaned
COST for SUCK: 3
Final Goal State: ['A', 0, 'B', 0]
Total Cost: 3
```

```
Enter the status of room A (0 for no dust, 1 for dust): 1
Enter the status of room B (0 for no dust, 1 for dust): 0
Enter the current vacuum location (A or B): A
Vacuum is placed in Location A
Location A is Dirty
Location A has been Cleaned
COST for SUCK: 1
Moving right to Location B
COST for moving to Location B: 2
Location B is already clean
Final Goal State: ['A', 0, 'B', 0]
Total Cost: 2
```

```
Enter the status of room A (0 for no dust, 1 for dust): 0
Enter the status of room B (0 for no dust, 1 for dust): 0
Enter the current vacuum location (A or B): A
Vacuum is placed in Location A
Location A is already clean
Moving right to Location B
COST for moving to Location B: 1
Location B is already clean
Final Goal State: ['A', 0, 'B', 0]
Total Cost: 1
```