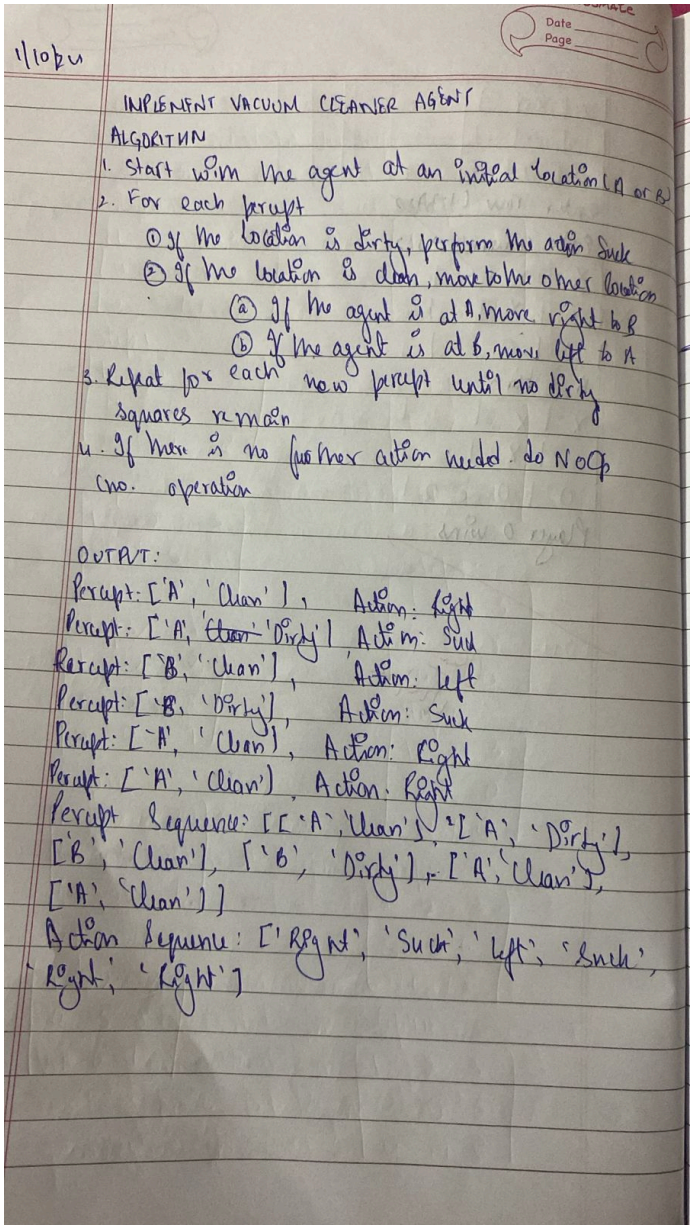
Date:1/10/24

Program Title:Implement Vacuum Cleaner Agent

Algorithm -



1/10/24

IMPLEMENT VACUUM CLEANER AGENT

ALGORITHM

1. Start with the agent at an initial location (A or B)
2. For each percept
   ① If the location is dirty, perform the action Suck
   ② If the location is clean, move to the other location
      ⓐ If the agent is at A, move right to B
      ⓑ If the agent is at B, move left to A
3. Repeat for each new percept until no dirty squares remain
4. If there is no further action needed, do NoOp (no operation)

OUTPUT:

Percept: ['A', 'Clean'], Action: Right
Percept: ['A', ~~'Clean'~~ 'Dirty'], Action: Suck
Percept: ['B', 'Clean'], Action: Left
Percept: ['B', 'Dirty'], Action: Suck
Percept: ['A', 'Clean'], Action: Right
Percept: ['A', 'Clean'], Action: Right
Percept Sequence: [['A', 'Clean'], ['A', 'Dirty'], ['B', 'Clean'], ['B', 'Dirty'], ['A', 'Clean'], ['A', 'Clean']]
Action Sequence: ['Right', 'Suck', 'Left', 'Suck', 'Right', 'Right']

Code:

```
def vacuum_cleaner_agent(percept):
  location, status = percept

  if status == 'Dirty':
    return 'Suck'
  elif location == 'A':
    return 'Right'
  elif location == 'B':
    return 'Left'
  else:
    return 'NoOp'
percepts = [['A', 'Clean'], ['A', 'Dirty'], ['B', 'Clean'], ['B', 'Dirty'], ['A', 'Clean'], ['A', 'Clean']]
actions = []
for percept in percepts:
  action = vacuum_cleaner_agent(percept)
  actions.append(action)
  print(f"Percept: {percept}, Action: {action}")
print("\nPercept Sequence:", percepts)
print("Action Sequence:", actions)
```

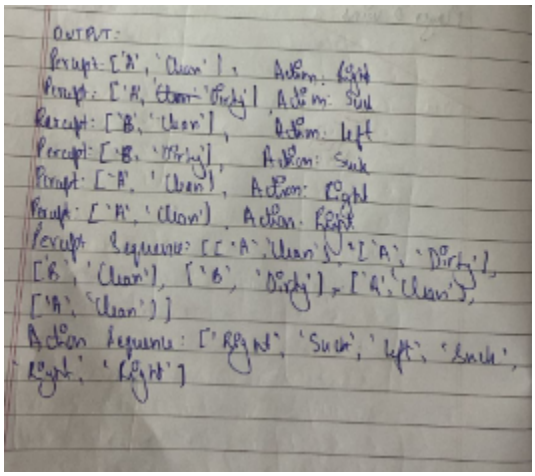
```
def vacuum_cleaner_agent(percept):
  location, status = percept

  if status == 'Dirty':
    return 'Suck'
  elif location == 'A':
    return 'Right'
  elif location == 'B':
    return 'Left'
  else:
    return 'NoOp'
percepts = [['A', 'Clean'], ['A', 'Dirty'], ['B', 'Clean'], ['B', 'Dirty'], ['A', 'Clean'], ['A', 'Clean']]
actions = []
for percept in percepts:
  action = vacuum_cleaner_agent(percept)
  actions.append(action)
  print(f"Percept: {percept}, Action: {action}")
print("\nPercept Sequence:", percepts)
```

Snapshot of the output

```
Percept: ['A', 'Clean'], Action: Right
Percept: ['A', 'Dirty'], Action: Suck
Percept: ['B', 'Clean'], Action: Left
Percept: ['B', 'Dirty'], Action: Suck
Percept: ['A', 'Clean'], Action: Right
Percept: ['A', 'Clean'], Action: Right

Percept Sequence: [['A', 'Clean'], ['A', 'Dirty'], ['B', 'Clean'], ['B', 'Dirty'], ['A', 'Clean'], ['A', 'Clean']]
Action Sequence: ['Right', 'Suck', 'Left', 'Suck', 'Right', 'Right']
```



STATE SPACE TREE: