EXPERIMENT – 06 **V**acuum Cleaner Problem (reflex agent / search)

AIM:

Clean a 2-square world using simple reflex or search.

CODE:

# vacuum.py

def reflex(agent\_loc, dirt):

# agent\_loc: 'A' or 'B'; dirt: dict {'A':0/1,'B':0/1}

if dirt[agent\_loc]:

return 'SUCK'

return 'MOVE-B' if agent\_loc=='A' else 'MOVE-A'

# simple search to clean both

from collections import deque

def bfs\_clean(start):

init=(start, (1,1)) # both dirty

q=deque([init]); parent={init:None}

while q:

loc,dirt=q.popleft()

if dirt==(0,0):

path=[]; cur=(loc,dirt)

while cur: path.append(cur); cur=parent[cur]

return list(reversed(path))

# actions

if dirt[0] if loc=='A' else dirt[1]:

ndirt = (0,dirt[1]) if loc=='A' else (dirt[0],0)

nxt=(loc,ndirt)

if nxt not in parent: parent[nxt]=(loc,dirt); q.append(nxt)

else:

nxt=( 'B' if loc=='A' else 'A', dirt)

if nxt not in parent: parent[nxt]=(loc,dirt); q.append(nxt)

return None

if \_\_name\_\_=='\_\_main\_\_':

print("Reflex action at A with dirt:",reflex('A',{'A':1,'B':0}))

for s in bfs\_clean('A'): print(s)

OUTPUT:

