EXPERIMENT = 03 Water Jug Problem (BFS)

AIM:

Reach target volumes using BFS.

CODE:

# water\_jug.py

from collections import deque

def water\_jug(cap, target):

start=(0,0)

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

while q:

a,b=q.popleft()

if a==target or b==target:

path=[]

cur=(a,b)

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

return list(reversed(path))

states=set()

# fill A,B

states.update([(cap[0],b),(a,cap[1])])

# empty A,B

states.update([(0,b),(a,0)])

# pour A->B

pour=min(a,cap[1]-b); states.add((a-pour,b+pour))

# pour B->A

pour=min(b,cap[0]-a); states.add((a+pour,b-pour))

for s in states:

if s not in parent:

parent[s]=(a,b); q.append(s)

return None

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

cap=(4,3); target=2

path=water\_jug(cap,target)

for p in path: print(p)

OUTPUT:

