DFS with Water Jug Exp. No: of Affigures study visited - Horse). Date:

### AIM:

To implement the DFS algorithm to water Jug, to measure exactly a target amount of water using two jugs with given capacities! I have Jolgon in radiation with

Crains, roddfing, dpy

Otas . holism.

## ALGORITHM:

Step -1: Intialise starting state with both jugs empty(0, and create a set visited to track.

Step-2: mark current state as visited.

Step - 3 : If amount of water in ofther jug equals the target, point the solution and terminate

Step - 4: Gienerate all possible next states.

Step - 5: Recursively apply DFS to each unvisited state. Step-b: If a solution found, Herminate recursion Step - 7: If no solution, print no solution. the grovered starting from rocks

### CODE :

def water Jug DFS ( jug1-capacity, jug2-capacity, target, current-24ete = None, visited = None):

i visited is None: None is the trick of Visited = set ()

if current-state is None:

current\_state = (0,0)

```
f°
  wount-state in visited;
                                               TOH HOT
     return false
visited. add (current_state)
jugi, jug2 = current_state
Print (f. Jugi: {jugi}, Jug2 : {jug2}")
   jug1 == target or jug2 = = target:
   Print ( solution found!)
    return True
Possible_moves = [ (jugi-capacity, jug2), cjugi, jug2-capacity),
                  (0, jug2), (jug1,0),
                  (min (jugi-capacity, jugi + jug2)
                   max (jug2-capacity-jug1))),
                  (max(o, jug1 - (jug2 capacity - jug2)),
                  min (jug2-capacity, jug1+jug2))]
    next_state in possible_moves:
       water Jug DFS (jug1_capacity, jug2_capacity, target,
                     next-state, useted):
          return true
return Palse
V_{k} = -name = = "--main = -"
    Jug 1_capacity = 4
   jug_2 - capacity = 3
                                               L 100 38
   target = 2
Print (* DES Travolsal for water Jug Problem: )
    4 not waterjug DFS (jug1-capacity, Jug2-capacity, target):
          Print ( No solution found.)
```

#### Output:

DFS Traversal for water Jug Problem:

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and there exacts the possible move

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most aroung

selve tales

Indi-colorania = A

- 8 - landes - chij

Jug 1:0, Jug 2:0

Jug 1:4, Jug2:0: Con figur finger 1) habit

Jug 1:4, Jug 2:3

Jugi:0, jug2:3

Jug 1:3, Jug 2:0

Jug1:3, Jug2:3

Jug 1:4 3 Jug 2:2 200

Solution found!

[ ((481) + 184) ) ]

# RESULT:

S = tilbung The program has been successfully exouted and the output is verified. The state of the Fruit ("No solicion found.