USING DFS WATER JUG EXPNO-3 AIM: To implement ward jug problem vising DES and execute successfully. PSEUDO CODE: function solvewaterjug Problem (capacity-jugl, capacity-jug 2, desired-quartity): stack = empty stack.

push initial state (0,0) onto stack 4911 werite stack is not empty. Lange **∮** '1 . ± current_state = pop from stack is ament-state repersons discired warrity! generate next etates from current state extrem current_state push next states onto stack setum "No solution found".) with a factor of PROGRAM: dej some warer Jug Problem Coapainty-jug 1, capacity -jug 2, awiidquartity): LOW I'M EXET WHILE Stack = CJ male le l'applicate il autori i i distribi Stack. append ((0,0)) (controller. "Fretzelel") thirty while Stack! Current_stare = stack.popl) y ament state [0] = desired -quantity of coment_state [1] == desired_quantity;

return aument_state PRIT. A MAGA next states = generate Next states Comment stare, capacity-jug 1, capacity-jug 2) stack extend (untistates) 1700000 Return "No solution found". des generate Next-States (state, capacity-jug), capacityjug2). next_states=[] wet states append (Capacity Jug 1, states (1)) Met states append listate to J, capacity jug 2)) next states append (10, state [1])) next_states append (1state [0], 0)) pour amount = min (stare to) capacity Jug 2 stare[1] kext-states append [(state [0] pour amount, Ade [] + pour_amounts) les otres asserts pour-amount = min (state [1], capacity jug 1-state[0]) ruct_states.append (Cotateto) thour_amount statety Equipment proposition (capacity). (appendiction) THEROUGH LINE when west states Solution = solve Water Try Problem (4,3,2)
plint ("Solution", solution) HOUR MINI Output: - Solution: (4,12) RESULT: Therefore the program is successfully executed and output is mujued.

EXP NO. 4 AX I dought the state of the state AIM! To write the At program and execute successfully. is a sometime of the many PSEUDOCODE! Function a star (graph, start, goal, humshis): CREATE an empty priority queul open est ENOUEUE 10, statt 7 INTO open Let CREATE groots Dictionaly with each office withalied tocujuity SET 9_ costs [starts = 0 CREATE an empty dictionary come from wille open set is NOT EMPTY I will to the plans DEPUEUE current made with the lowest prionty Coost theunistic) from open et IF current_node == goal: CREATE an empty list path willE current_node IN carre from: ADD current node to path 85+ current_wodl = came promicurent_wodl ADD start to path REVERUE path PRINT path RETURN

For each neighbor, cost in graph [current_node]:

set grounds the tentamin - growt = growts [current_node]

+ cost

If Fentative -g-cost < g-costs [neighbor]: let grants traighbor J = rentative gross set f_cost = tentative_g_cost + housestic [nighbor] ENOUBUE (4_cost) mighbor). INTO open ent. SET came from Enighbor J = current mode peint "No path found" FONCTION cuate graph(): CREATE an empty dictionary graph PROMPT "Enver no. of nodes: " AND READ numeral for i FROM 1 to num nodes: PROMPT "Enter sere node: " AND READ unde PRIOMPT "Enter the neighbors of anode" with cost (tornat: neighbor cost): "AND READ neighbors split nughbors into a lit. SET grouph [rade] = [theighbors [i] int (neighbors [i+1]) for i From Ob lingth theighbor)-1STEP 2] PETURN Joaph. FONCTION cuare hunities (): CAFATE our empty dictionary heuristics transfer PROMPT Enter ter ou of nodes with hemitic value:" AND READ NUM modes tol I prom 1 to mem moder: PROMPT "Forker the woode: " AND READ NODE PROMPT "Enter healur of Enode y: "AND Read h. Let heunistic Consde I sheunistics lehun hunis Hes

Function main (): SET graph = CALL cleare graph 1) SET hundrics = care ouare number () PROMPT "FINER the starting made: " AND READ starting PROMPT " Enter the goal water " AND READ goal wal IN graph AND goal wide in graph: IF start_upole PRINT Clarching for path from Estart node y to Egoal- node I' asing At algorithm: CALL a Star Graph, start mode (goal - mode, heuriste) EUE? 19:20 (1/1912 (1644 " = \$bat sold sold sold) PRINT start or goal wall not found in the graph." ONU main Cyningian april and " (Jose Horliger : to. til a collar tro-france of PROGRAM: from queue import Prionty aueu dy a star (graph, start, goal, hewittes): open set = Brienty owen () 2) Himma show Hout. open_set-put (10 retart)) g_costs = { node = float ("ing) for mode in graphy g-0018 [Hout] =0 caul- mm= {2 whill not open set empty !): cument west, cument med = open set get () If current made == goal:

path = CJ while current node in care from: pater-append (current_node) cument_mode = came_from townout mode? path-append (Start) path unewell peut caparer sound:", '->! join (parer)) when. for heighbor, cost in graph [current_wode]: rentative goodt = g_costs [convent_wode] + cost y heutatine -g-cost < g_costs trulghbor]: g-costs theigh bor] = tentative _ g_cost francost = leatative_g_cost theunitée taughbor] open_set.put (Cf-cost, Neighbw)) came _mm [nuighbor] = current rode puint ("No pater found") know Myrry no seems dy diate graph(): 11001 why of printers it is graph = d's hum nodes = int (mput ("Fater den no. of vioder: ")) Pol en range (num_nodes): node = input l'Enne mode: ") keighbut = criput (4" Enter neighbor of Enodely with cont (Amnad: neighbor cost): 11) . split () graph Eught = [Chighbox [i]. int (mighbox [i+1]) for i in range (0, len Cheighbers), 2) Metun graph

def mare hunistes (): hemitice = 23 hum mode = cit. Linput La Enke mag rades with healing. for in range (num nodes): (France transport node supiet ("Enter node: ") heuristic = cht limput L+ "Entil tele hvalle of small heren't'c Inale I shereistic strum hourstiessome I Agon as the sally, dy main! : Exodiplint thought the point the graph = cuare graph ! heunistics = quale heunistics) start mode = capit ("Enter the starting mode; ") goal roch = aipert ("Enter the goad node i"). I start node in graph and goal node in graph: punt (5" Searching for path from '& stant mode) to ((Egoal node) wing At algorithm: 10) Eb = 1/4 a star (graph, start mode, goal mode, hoursto) (" show I will theight a who clal: rebuilt ("start or goal node "not found in the graph" D_name_= = 12 12 main = 1 11, main = 12 main (livation) of lead to . [3] soldpises [=] (etc) of light institution i rouge (or looking when it is said

OUTPUT : Enter the no- of nodes: 4 Entel wode; A g st 4 than South Enter the neighbors of A with costs (format: wigh box cost): B1C4 Enrel Add: B Enter the neighbor of B with nort (tornat insighborcost): · BD (179/2/2 + + + 174+17) + 191 C 2 D 5 Early the worl: C " : D] 11 Eurer the m Enrer vode: D Euter " C Enter the no. of woder with health: 4

Enter the wood: A
Enter health of A: T

Euner ten node: B

Eurer 1 " C: 2

Enter the stating node: A

Eure due node: D

Enter seu hvalue ef D:0

Early for goal node: D

Scarching for path from 'A' to 'b' using A" A 160 ho f algorthm: Path found: A -> B -> C -> D

ged Agreed: from the Bother Affine to be a selected. RESULT: Therefore the program is sucustfully executed and output is neujoid. d that he Francisco What grand in A TRANSFE FOR The state of the state of the state of A cover the second i o granda era Tissens with 10th I I digita postual nomi A Sphorper fifty will read Strend from the Jean's