AIM! To write the A* program and execute

PSEUDOCODE!

successfully.

Function a star (graph, start, goal, humsty)

ENOUBUE COISHALL ? INTO open set

CREATE growth Dictionary with each office wirelies

SET 9_ oosts [starts = 0

WHILE opin_set is NOT EMPTY

DEPUEUE current made with the lowest prionty
Cost themistic I have do

IF current_node == goal:

CREATE an empty list path willE current_wode IN came from:

ADD cument_node to path

857 current_node to path 857 current_node = came prontement_node

ADD start to path

REVERJE pouth

PRINT path

For each neighbor, cost (N graph Ecument node):

set grost t tentation - growt = growts [current will]

If tentatrie g cost < g costs [reighbor]: let grounds traighbor The rentative gross set f_cost = tentative_g_cost + heuristic [neighbor] ENOUBUE (1- voit) neighbor) INTO open-ect. SET came_from Enighbor] = current_node peint "No path found" FONCTION cuall graphs: CREATE an empty dictionary graph PROMPT "Enter no. of nodes: "AND READ numuode for i FROM I to num nodes: PROMPT "Enter the mode: " AND READ mode PROMPT "Enter the neighbors of anode" with cost (tornat: neighbor cost): "AND READ neighbors split nuglibor wto a lit. SET graph [rade] = [cheighbors [i+]]) for i From 0 to lingth cheighbor)-1 STEP 2] RETURN Graph. Unitable: Fisher & FONCTION cuate hunities (): CAFATE our empty dictionary hermistics PROMPT "Enter tere un of modes mitte hemistic value" AND READ NUM mode tol i prom 1 to num moder: PROMPT "Entre the mode: " AND READ NODE PROMPT "Enter healure of Enode y: "AND Read h. Let heund He Toward = heunistics lihum humis Hes

Function main (): SET graph = CALL chare graph () SET humitics = care ouare humitics () PROMPT "Finer seu starting mode: " AND READ starting PROMPT " Enter the goal node: " AND READ goal was IN graph AND goal node in graph. IF start upole PRINT Beauching for path from 'Estaut ande I'to "Egoal- node I' asing A" algorithm: CALL a-star Graph, start-mode, goal-mode, heuristes FULE? HE LIGHT OWN PRINT start or goal word not found in the graph. and main of a logical date high in the workings on the tell a still troducted the PROGRAM: from queul import Prienty Gueu des a star (graph, start, goal, hemistics): open set = Priorty Queu () Lose hunist open_est-put (10, start)) g_costs = I node = float (liny) for wood in graphy g- Costs Estact =0 caul- from = \$2 wehill not open set empt (): cument east, cument med = open_set.get () If current made == goal:

path = CJ while current made in care from: path-append (unvent-node) cument_node = came_from townest -wode? path-append (Start) path uneise () peuit la Parter found: ", '->! . join (parter)) when. for neighbor, cost in graph I current mode]: rentative g cost = g costs [current_woode]+ cost y heutative -g-cost < g_costs Eneighbor : g-costs thigh bor] = tentative _ g_cost frost = leastative_g_cost themistic taughbox] open_set.put (G-cost, reighbar) came _mm [nighbox] = ciment rode puint ("No partir found") and steppe no steppers. dy wate graphy: 1001 stog of point and is him. graph = d's hum nodes = int (uput ("Entel den no. of voider: ")) graph = d's Pot en range (hum_hodes): tuo. node = injut ("Enne mode: ") Rughbul = criput (+ " Futer neighor of Enode's with cons (Amad: neighbor cost): 11). split () graph Enode] = [Chighbox [i]. unt (mighbox [i+1]) for i in range (0, een Creighbors), 2) Metun graph

def mare hunistes (): heunitice = 23 hum node = cit limpet l'Eure was roder with holing. for in range I num nodes): node surpret ("Enter node:") hemistic = cit Curput (4 "Entil ter hvalue offman) herewitic Trade I showestic etum hemistics. dy main!): graph = cuare-graph() humistiss = cuall humistics) start mode = cupiet ("Enter the starting mode: ") goal rode = aipert ("Enter the goad made:") I start node in graph and goal node, in graph: kint (5" Searching for path from '2 start nade I' to Egoal node? wing At algorithm: ") a star (graph, start-mode, goal-noile heunits) Clal = built (wfait or goal mode not found in the graph" "__main__"; main!)

butput: Enter the no- gludds: A Entel wode: A Enter ser neighbors of A with costs (format: wigh box cost): B1C4 Enrel And : B Enter the neighbor of B with nort (tornat insighborcout): C 2 D 5 Early the wooll: C Eurer the m Enter vode: D Euter " Enher the no. of nodes with hvalue: 4 Enher the mode: A Eurer health of A:7 Eurer ten node: B 10 10 B. 6 Eure viode: C Eurer " " C: 2 Eures due mode: D Enter sere health of D:0 Enter the state Fing node: A Early for goal work! D

Searching for path from 'A' to 'D' using A' / When by your stay , algorithm: Path found: A -> B -> C -> D and general to the end wanted RESULT:

Therefore the program is sucusefully executed and output is neujoid.

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