Assignment: B1

TITLE 8 bolve 8-Puzzle Problem using A* Algorithm
Assume any initial configuration and desine
goal configuration clearly. Objective ? · TO learn and understand use and need Of A+ algorithm. · To apply A* algorithm to real time problem · To inflement A* algorithm using suitable frogranting language. outcome : we will able to: · Jean about A+ algorithm Apply At algorithm to solve 8 - Puzzle of the poblet with the (Shellow sinide into 180) Il Gostvare and 8 OS: Fedora 20 whente (64-6it) Hardware RAM: 4GB : STANON IC Requisements HDD: 500 GB Python libraries, lython boursesort, Message of allow of Java franciscost on Miles Theory & State less soll of laying · A* is the most fopulate newsishe search Algorithm Jon finding lath in a graph.

A + (A stor) is a Search algorithm that is used for j'inding fath from one node to another. so it Can be confuted with Breadth fixet search on vijkstrais algorithm on Petty first search. At agorithm is

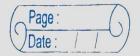
widely used in graph search for being better in extidency and accuracy where graph fre-processing is not an option. · A # ?s as specialization of best fixst search, in which the function of evaluation is define in a Particular way. · P(h) = g(n) + h(n) is the minimum cost since the initial node to the objective conditioned to go thought node of · g(n) is the minimum cost from the initial node to n. . h(n) is the Minimum cost drom or to the west objetive to N. W. Andrews · A* is as informed search Algorithm and it always government to find the smallest fam in the least Possible time of (nes admissible houristic). so it is both complete and office. FOR EXAMPLE: An 8 Possie game consist of a 3x3 goid (containing a squares). One of the square is entry. The abject is to move to squares around into different positions and having the numbers dis played in the goal state finhal State: goal state: 4 2 5 6 1 8 6 / 7 8 1 a some took without the betition

· Hewricke to be assumed: Let us consider me Manhattan distance between the arrest and final state as the houristic for this Problem Statement. n(n) = [x-P] + [y-q] where x and y are (eu to-oxalinates in me corrent state. Pard q are (ell co-cordinates in the final state. · total (ast function: So the total cost function for is given by f(n) = g(n) + h(n) where g(n) is the cost required to reach the current state from given initial state. Algorithm: 1. Initalize he open list 2. fritalize me close list Put the starting nocle in the open list 3. while openist is not entry I find the node with least for the ofen list (au it '9)' 2. Pop 'q' of open 1ist 3. generate 'q' 's succession 4. for each successor 1. if succession is the goal, stop search 9: 9.9 + distance (succession 4)

Successor. h= distance from good to successor

Fuscall T

Succession. 8 = distance from Succession & +



2. if a node with the same Parition as successor				
is in the open list which has a lower y'				
Score than successor skip this successor.				
3. if a node with the same Prosition as				
Succession is in the closed list which				
has a lower 'P' than successor skip his				
successor otherwise to the ofen list.				
5. end for				
6. Push of on the closed 195+				
4. end will.				

Test (asss:

	0%2008121600	Experted onthot	Albal OutPut
[i]	Start State:	Goal State:	C. J. Chaba
	1 2 3	1 2 3	Gaal State:
	4 - 5	4 5 6	4 5 6
	186	7 - 8	7 - 8
	goal State:		Repult:
	1 2 3		Pass.
	4 5 6		
	7 - 8		

Conclusion : zww we successfully inflorented 8loggle Problem and solved using A *
Algorithm.