Assignment 1

Qno.1.

Complexity:

Time complexity is a concept in computer science that deals with the quantification of the amount of time taken by a set of code or algorithm to process or run as a function of the amount of input.

(i) Time complexity for depth-first-search

O(V)

→ If the entire graph is traversed the temporal complexity of DFS is o(v), where v is the number of vertices.

(ii) Time_complexity for breadth_first_search.

$O(V+E)$.

→ The time complexity of BFS is $O(V+E)$ when Adjacency List is used and $O(V^2)$ when adjacency matrix is used, where V stands for vertices E stands for edges.

(iii) Time-complexity for best-first-search

$O(n * \log n)$

→ where n is the number of nodes.

→ The worst case is we have to visit all nodes before reach to goal.

(iv) Time-complexity for greedy_search :

$O(b^m)$

→ where m is the maximum depth of search

space complexity.

(i) space_complexity for depth-first-search.

$O(h)$

→ The space complexity for DFS is $O(h)$ where h is the maximum height of the tree.

(ii) space: complexity breadth-first-search.

$O(|V|) = O(b^d)$.

(iii) space-complexity for best-first-search.

$O(bd)$

(iv) space-complexity for greedy-search.

→ Time and space complexity of greedy-search is same.

Qno.2.

Difference Between

BFS	DFS
(i) BFS, stands for breadth-First Search	(i) DFS, stands for depth First search.
(ii) BFS uses Queue to Find the shortest Path.	(ii) DFs uses stack to Find the shortest path.
(iii) BFs is slower than DFs	(iii) DFS is Faster than BFs.
v) BFs is better when target is Closer to source	(iv) DFS is better when target is far from source.

Similarties between

→ The time complexity of both these algorithm is same.

→ Both algorithm is try to find out the best Path to reach the destination.

Qno.3.

Heuristic.

→ A heuristic method of learning involves discovery and Problem solving using reasoning and past experience.

Useful:

Heuristic are mental shortcuts that allow people to solve Problem and make judgments quickly and efficiently.

uses of Heuristic:

→ we use heuristic in all sorts of situations.

→ It is used to solve little mental shortcuts Problem and make quick, efficient judgment calls.

→ Heuristic help cut down on your decision making time and help to move one task to other.