

# Report

In this assignment the, I have implemented 6 searching algorithm (BFS,UCS,DLS,IDS,GBFS & A\*) .

Basic idea of these implementations is the same as others.But my procedure to print the path of the solution is not alike as you mentioned in the assignment.

In my node structure, **string path = ""** is declared.I concat all the action to reach the current node from the root node in this variable.After being reached into the goal state, "**print\_par(...)**" is called to print the path recursively.

Also for DLS and IDS, my visit function, "**void make\_visitDLS(...)**" , is different. To visit, I use the state and the cost/depth of this state as a pair rather than only state, so that same state in the same level won't generate more than once in recursion tree.This is because, whether a state will lead to the goal within limited level or not is depend on, in which level the state is generated.

Among all these algo,as in GBFS,DLS and IDS,there appears random option to choose the next node,the output against the same input differs from person to person

.

And though GBFS are not always expected to return optimal ans, my GBFS function returned the optimal move for all the cases of the file. That's why the black line of the GBFS is in the cost graph is being overlapped.

.

Here 3 graphs(step vs cost,step vs time,step vs total generated nodes) are given below for 20 different inputs. I added the file of those cases,that I used to plot these graphs

One can observe all the 6 algorithms from these.



