AIN SHAMS UNIVERSITY
FACULTY OF ENGINEERING
ICHEP – Junior Level – CESS
CSE 472: Artificial Intelligence
Spring 2022

Final Project

Artificial Intelligence

CSE 472

Submitted by:

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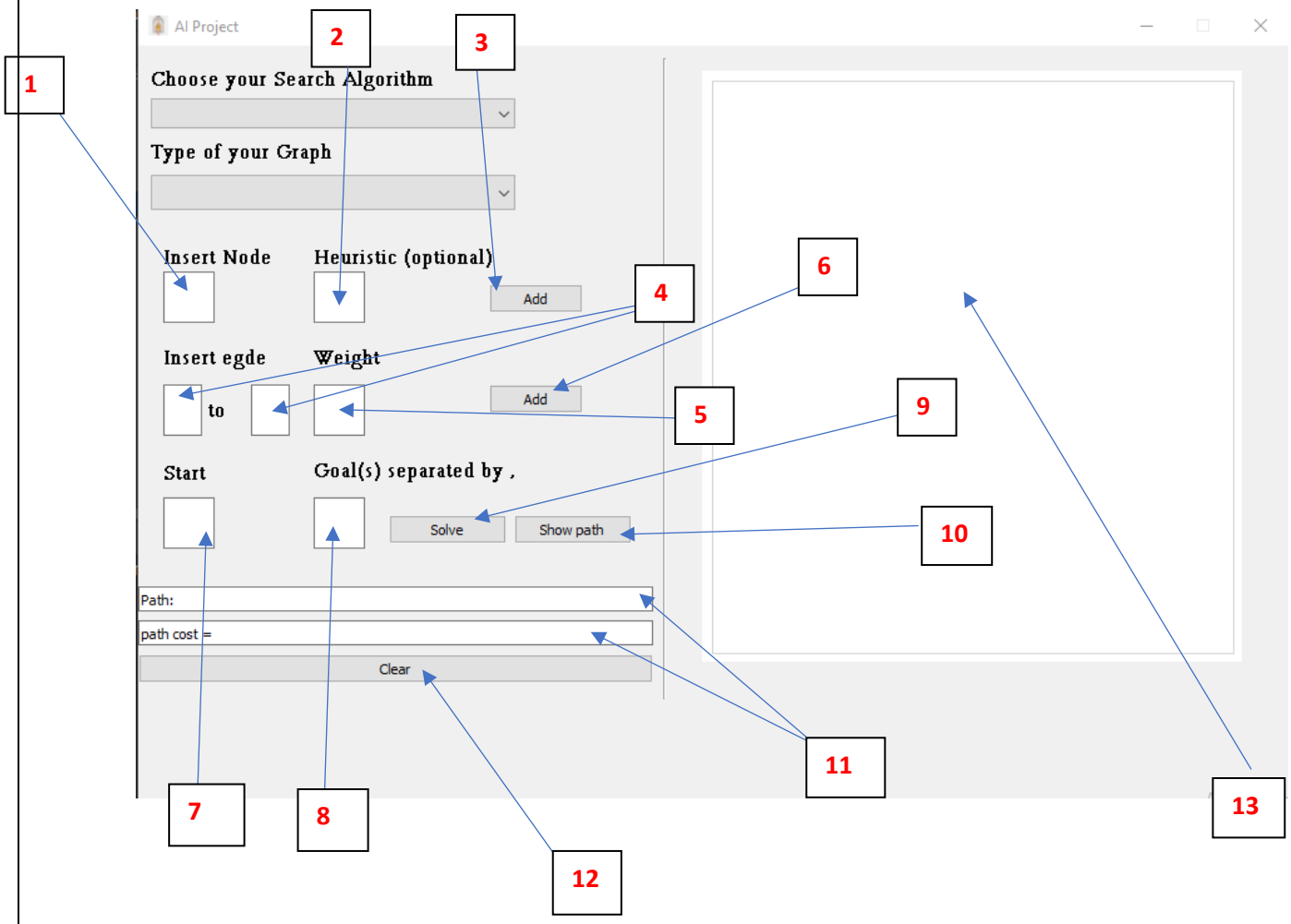
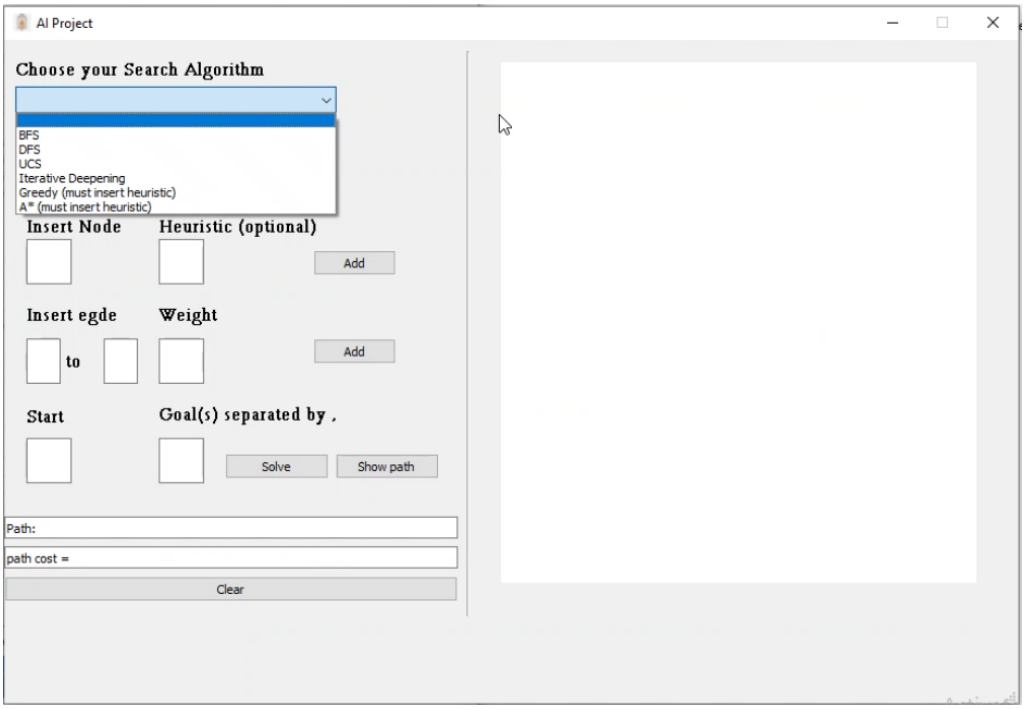
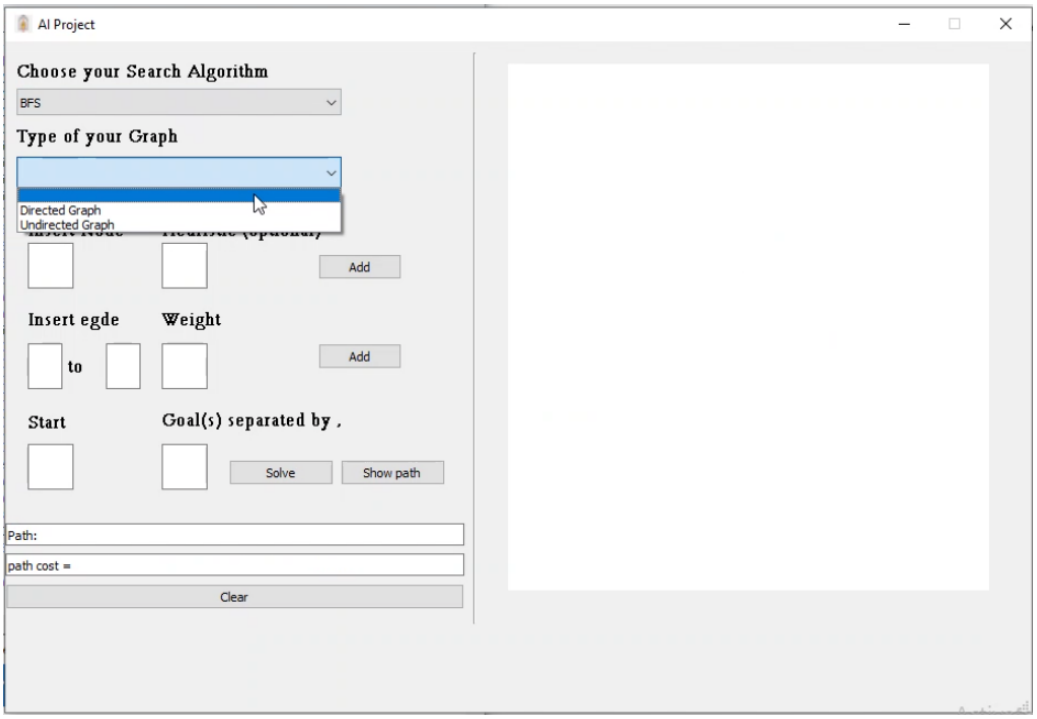
USER GUIDE



1. **Text box to insert the node name**
2. **Text box to insert heuristic value (Optional, default =0) only used for A* And Greedy algorithm**
3. **Button to add the new node into the graph**
4. **Two text boxes to insert the two nodes we want an edge between them**
5. **Text box to insert the weight of the required edge (default = 0)**
6. **Button to add the new edge into the graph**
7. **Text box to insert the start node**
8. **Text box to insert the goal node**
9. **Button to solve the problem and show the path, path cost and visited nodes in graph**
10. **Button to color the solution path in graph**
11. **Text fields to show the solution path and its cost (in some searching algorithm only)**
12. **Button to clear all fields and graph**
13. **Graph widget that shows the tree**

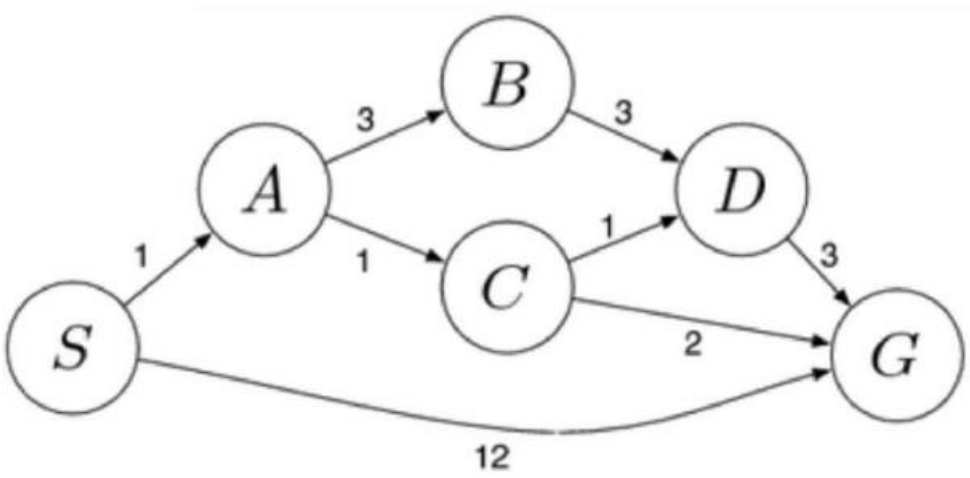


Shows the searching algorithms provided



Choosing whether the graph is directed or undirected

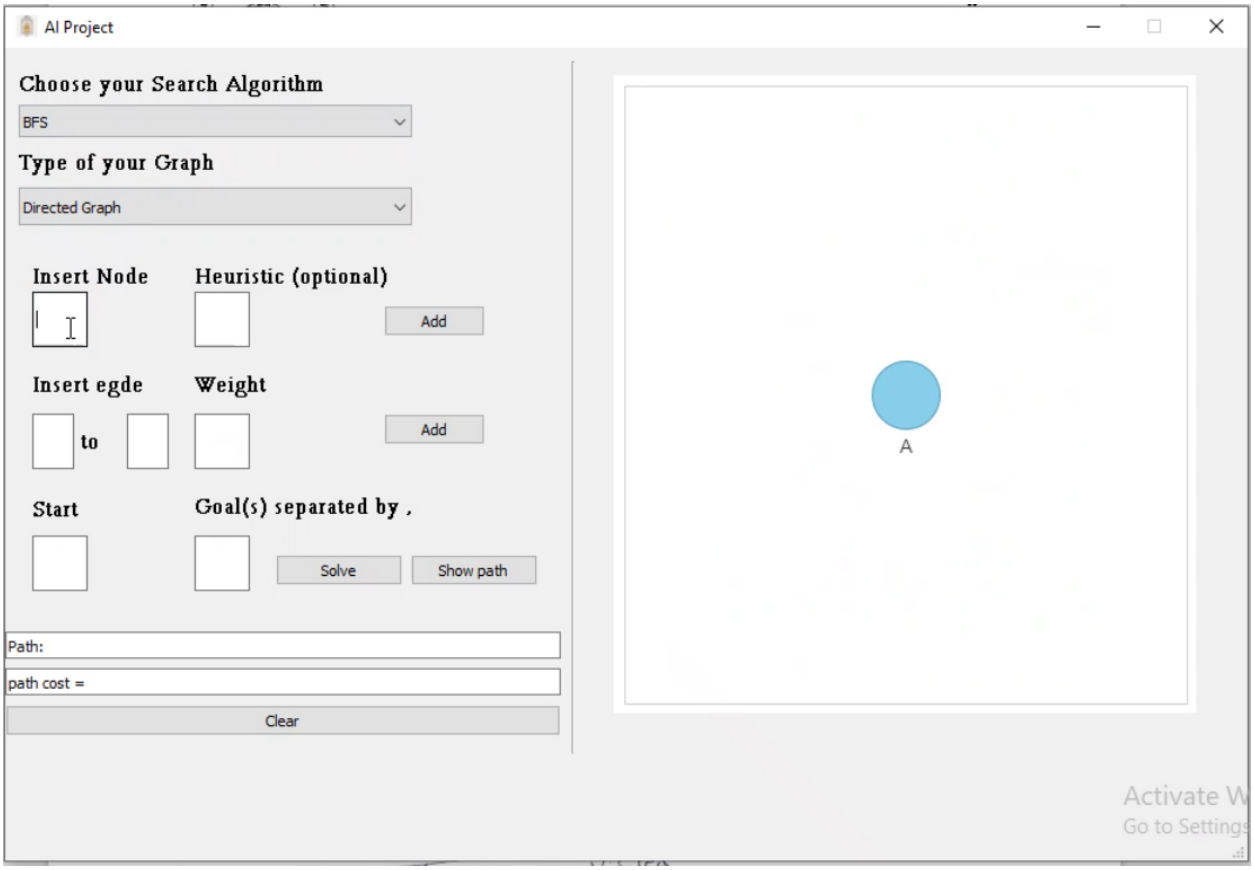
EXAMPLES



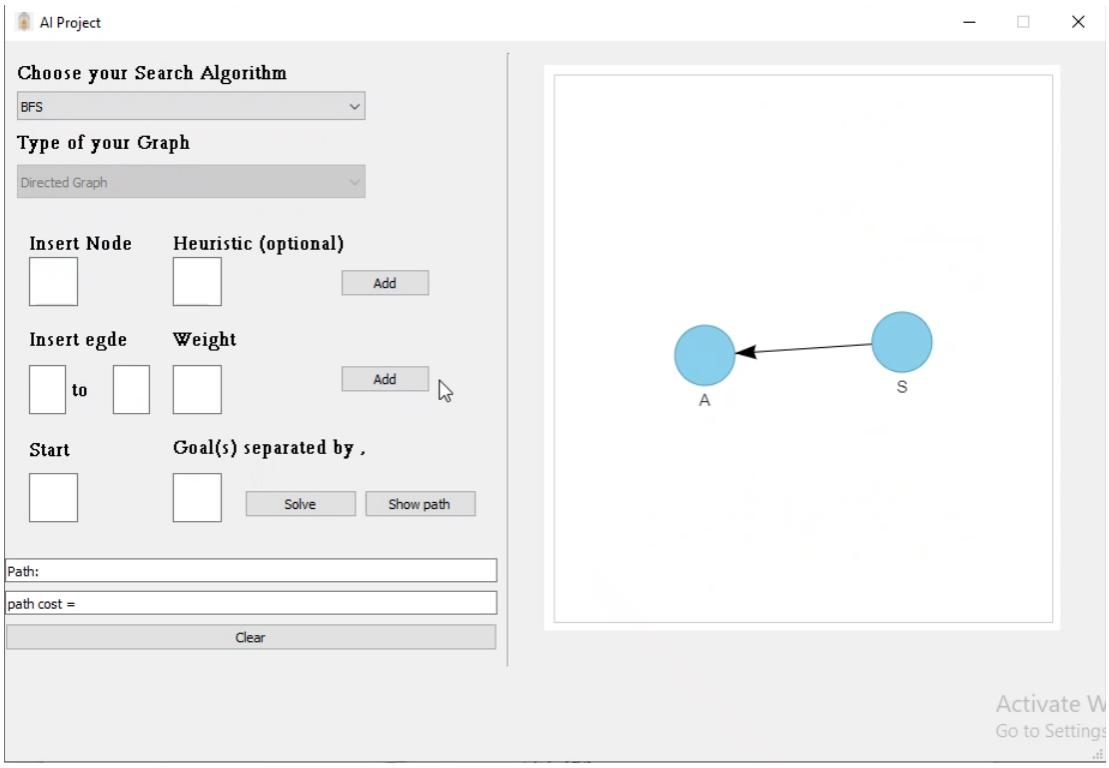
Apply the following search strategies where S is start state and G is goal state:

a. Breadth first search
b. Uniform cost search
c. Depth first search

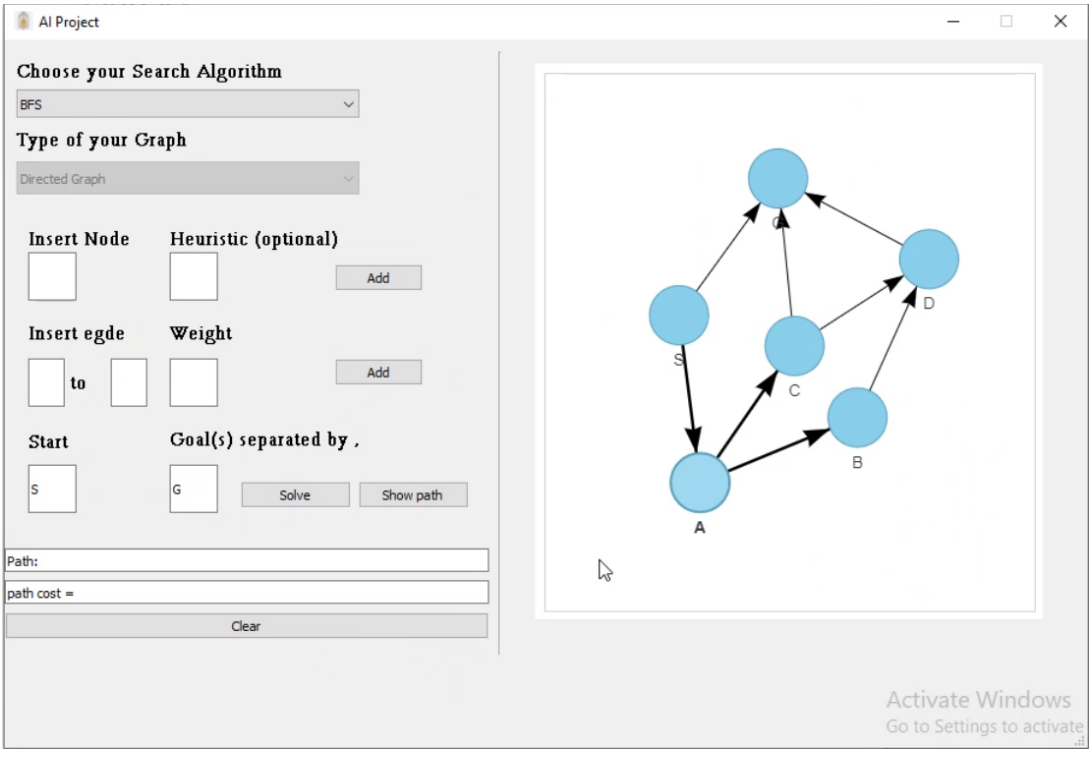
EXAMPLE 1



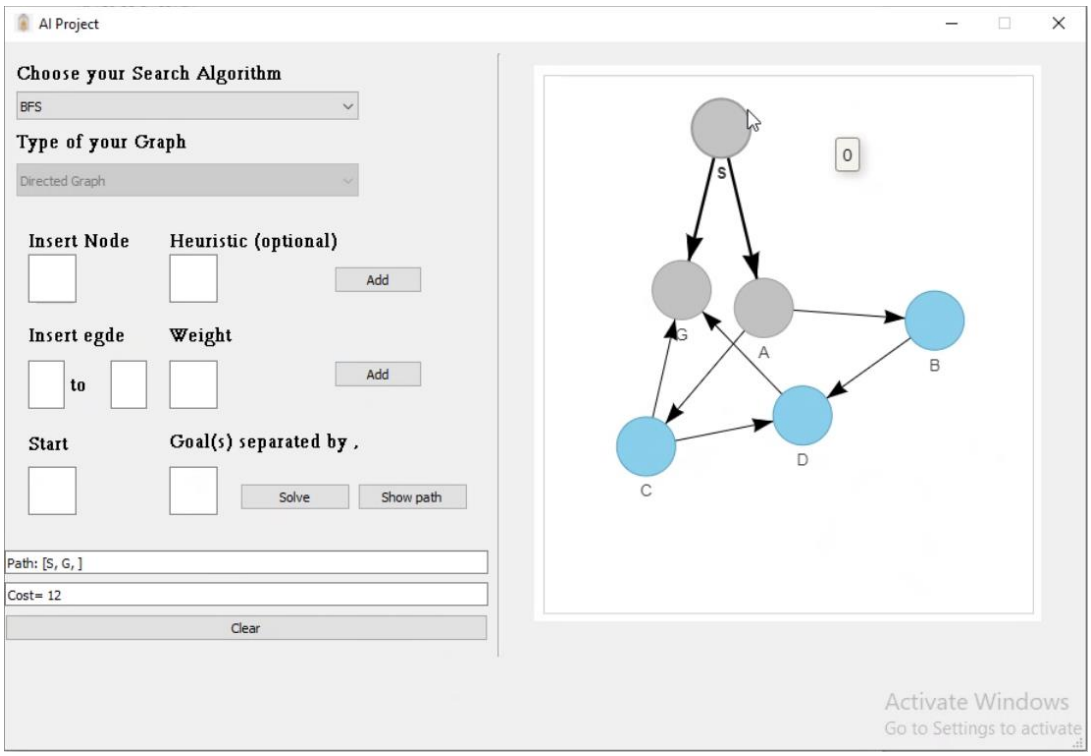
Start entering nodes (after selecting searching algorithm and type of graph)



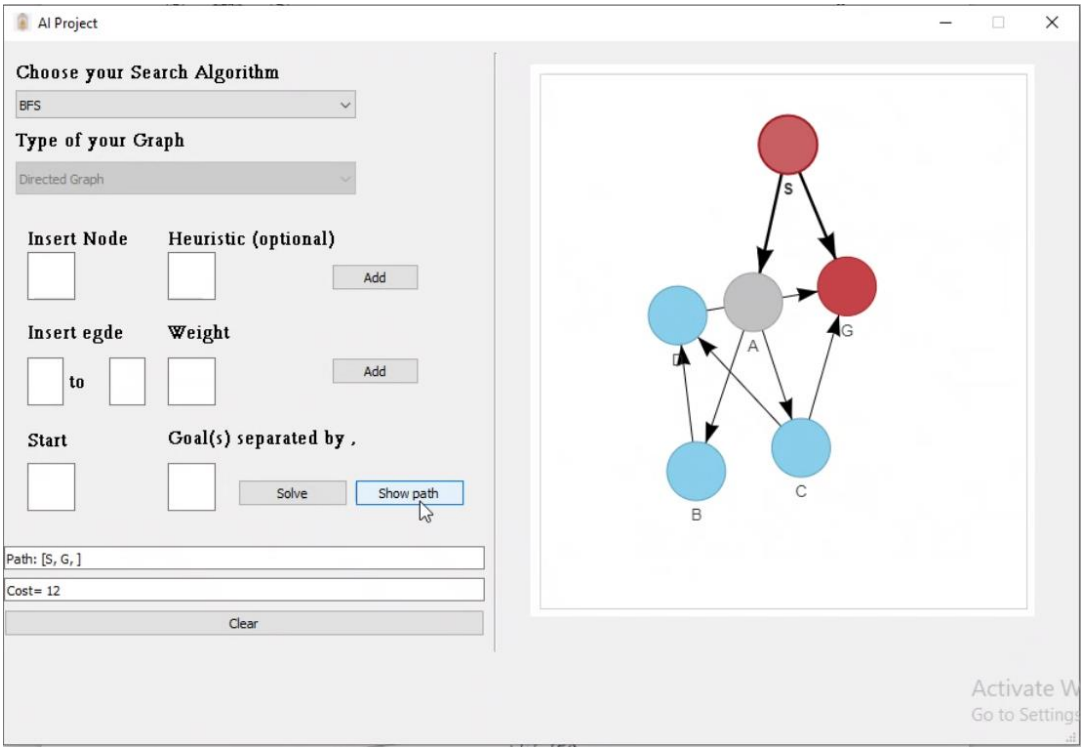
Entering edges



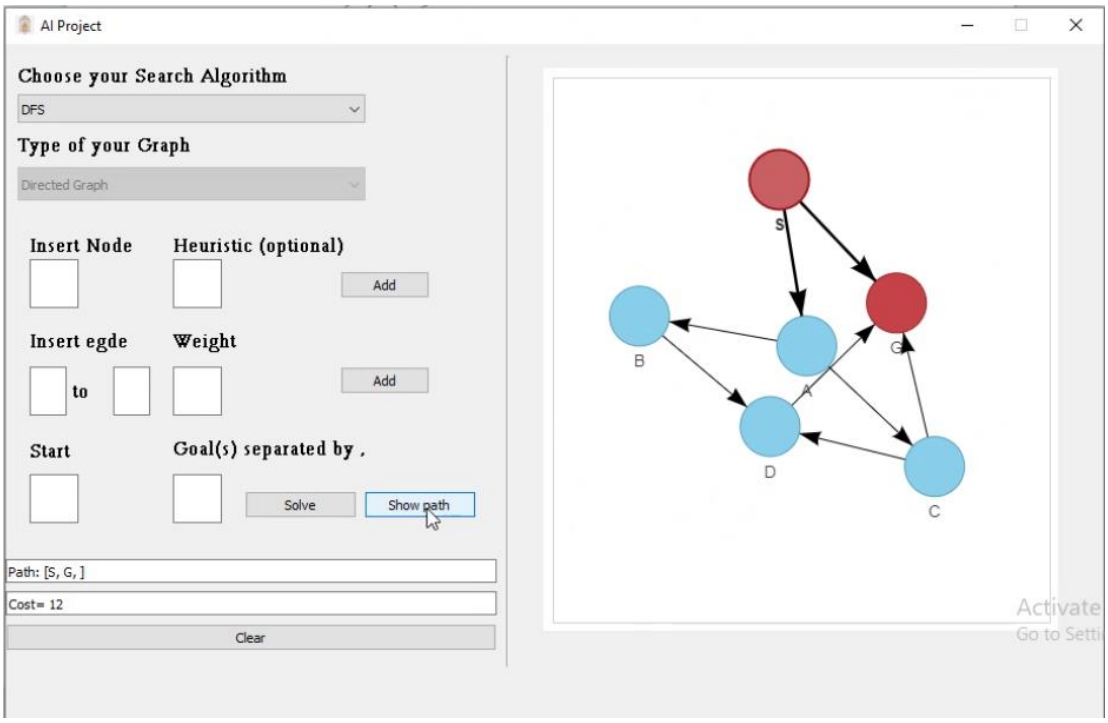
Whole (BFS) example inserted



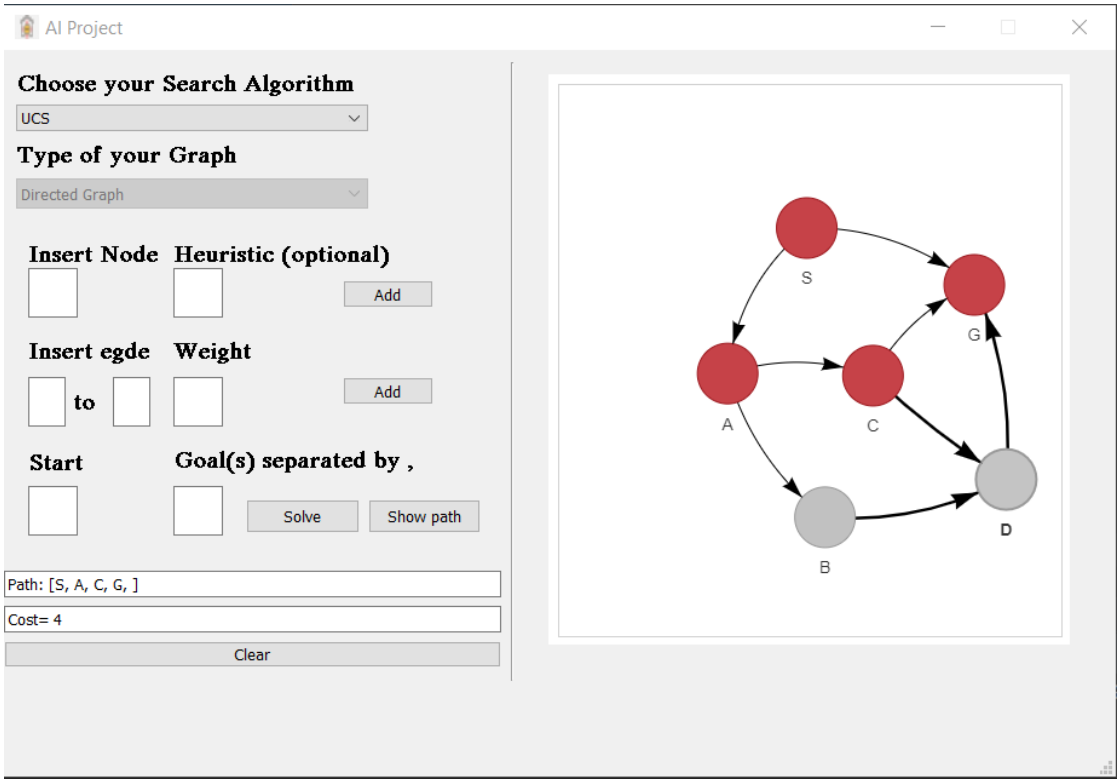
Solved (BFS) example



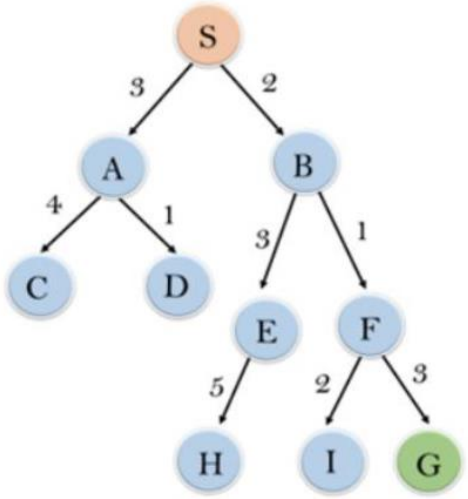
(BFS) solution path



(DFS) solution path



(UCS) solution path (after inserting weights)

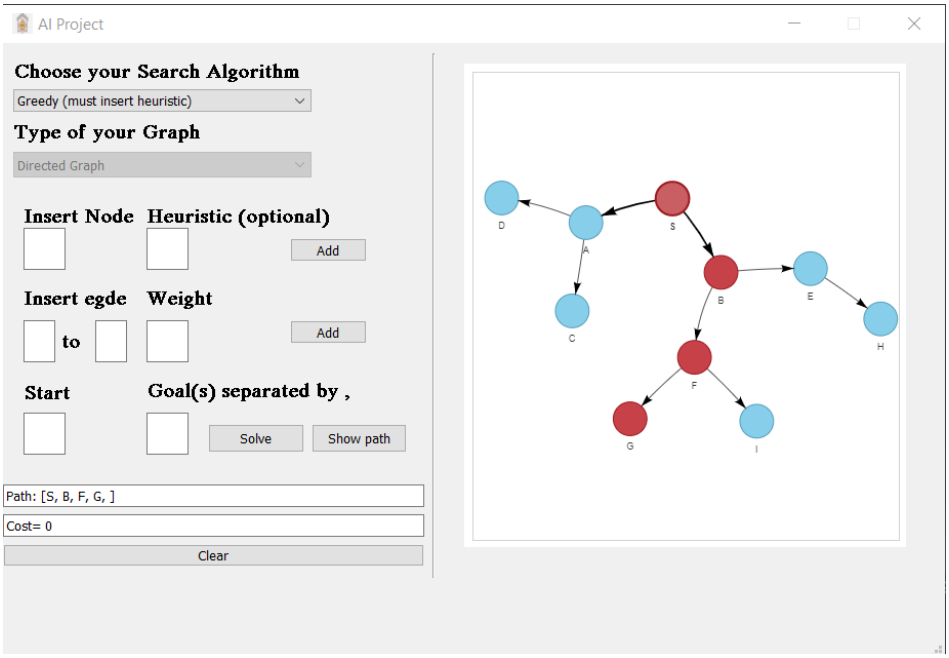


node	H (n)
A	12
B	4
C	7
D	3
E	8
F	2
H	4
I	9
S	13
G	0

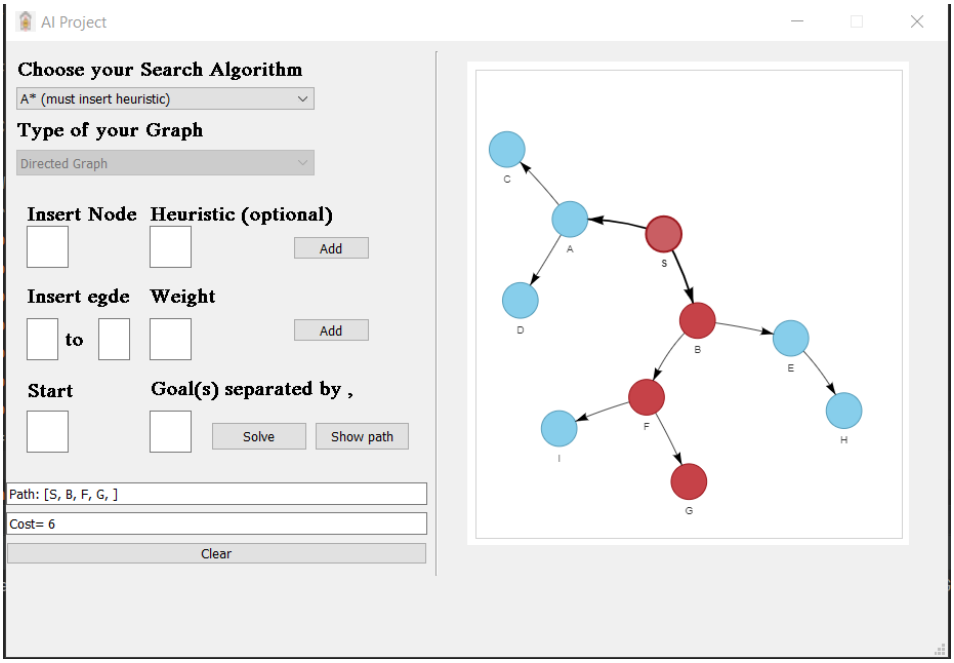
Apply the following search strategies where S is start state and G is goal state:

a. Greedy best first search
b. A* search

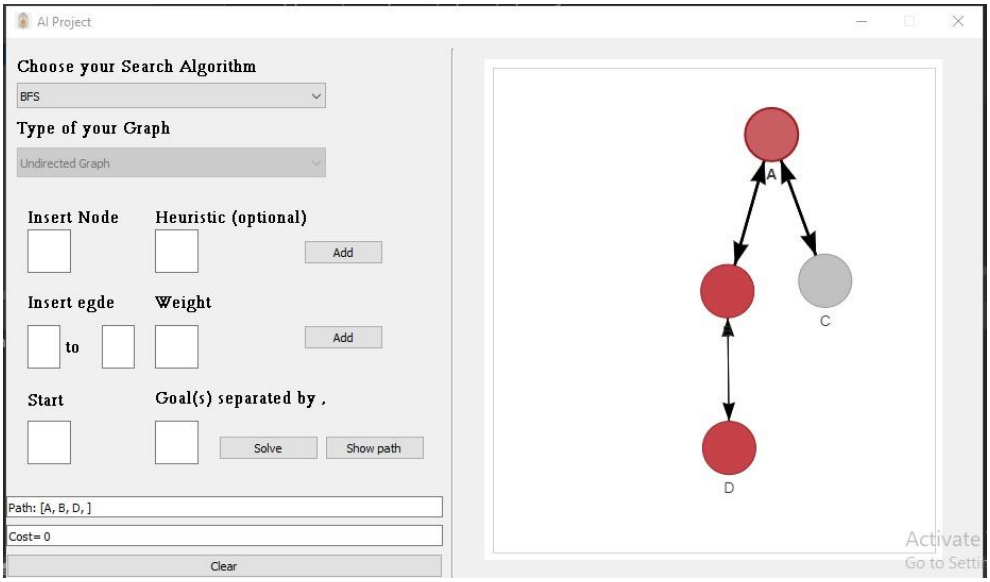
EXAMPLE 2



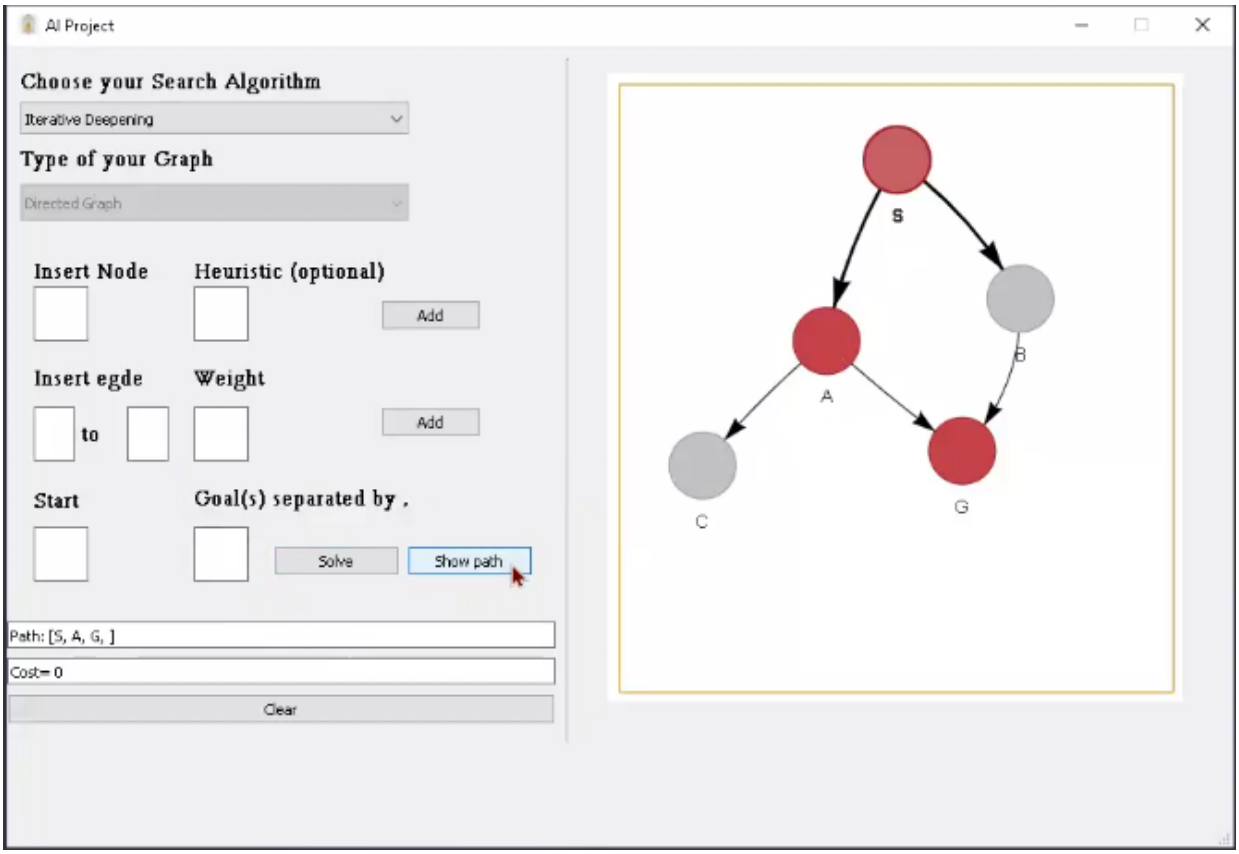
(Greedy) solution path (after inserting heuristics)



(A) solution path (after inserting weights and heuristics)*

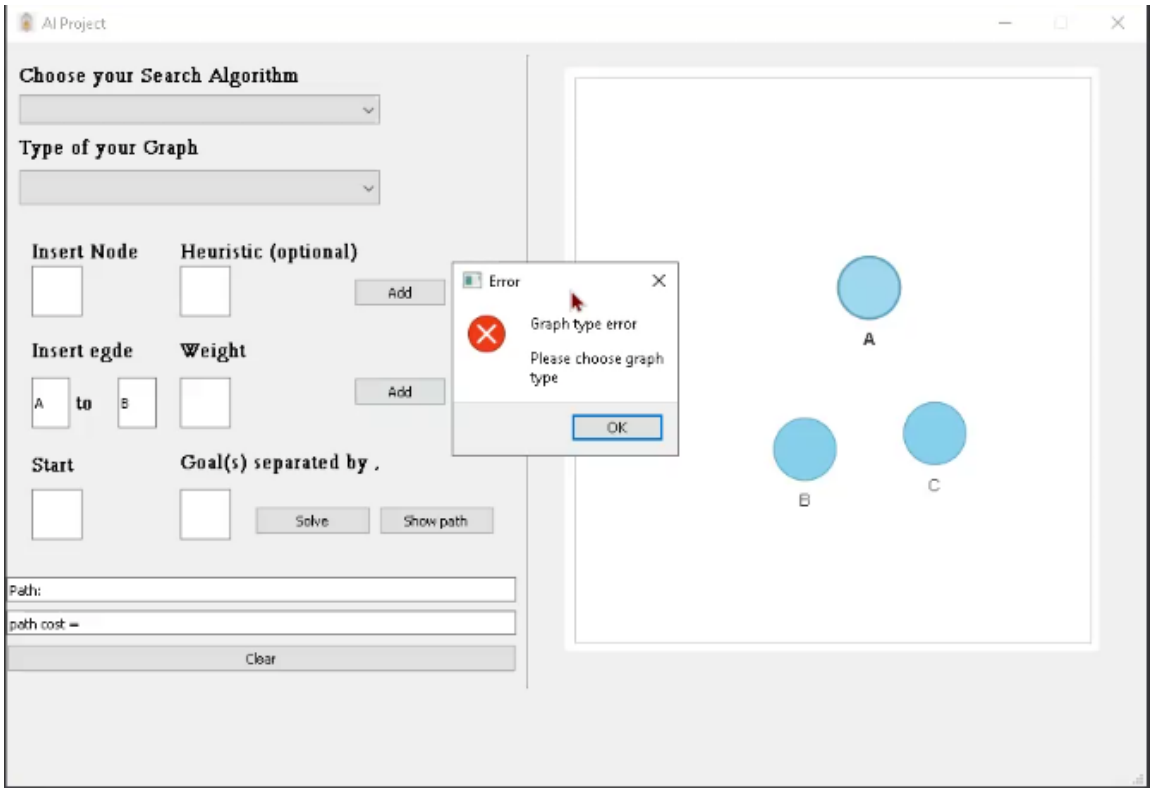


Example 3: Solving undirected graph using (BFS)

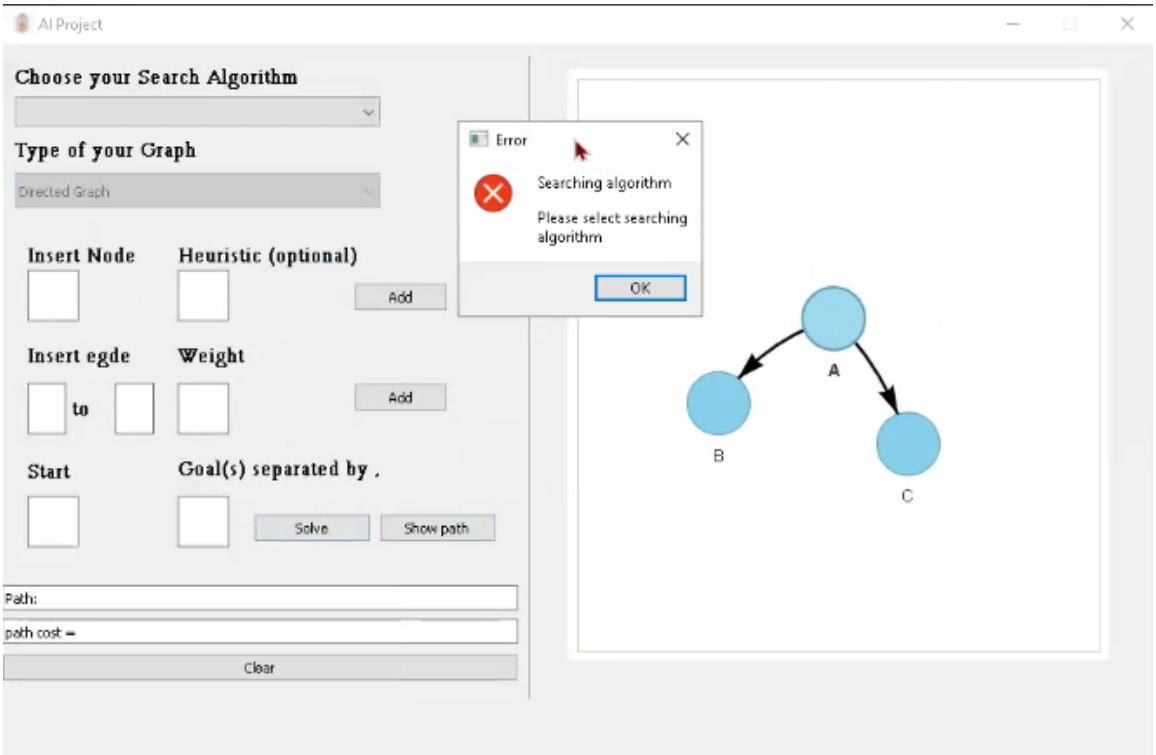


Example 4 using (Iterative Deepening)

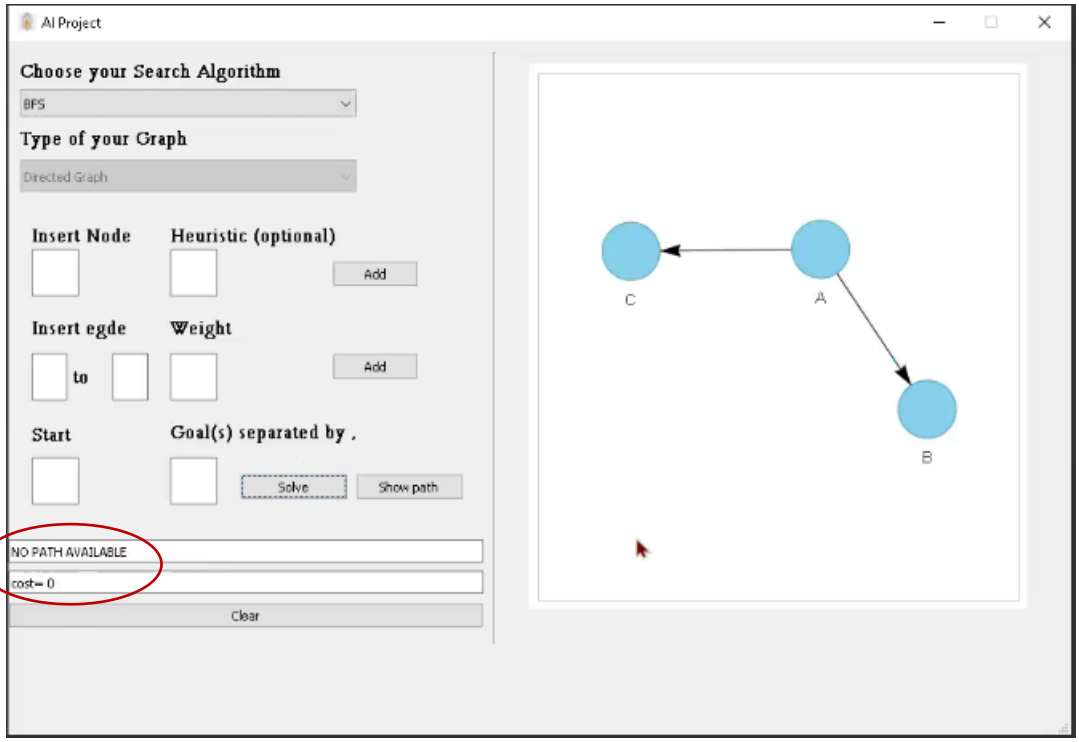
EXCEPTIONS



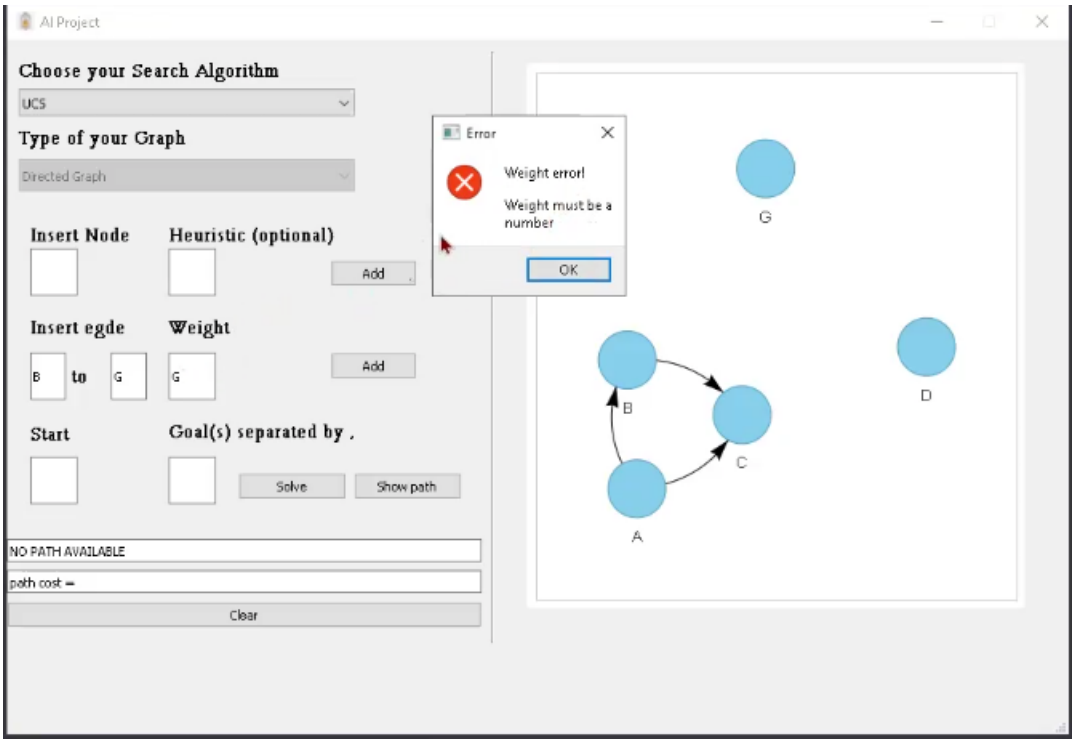
Exception when graph type is not selected



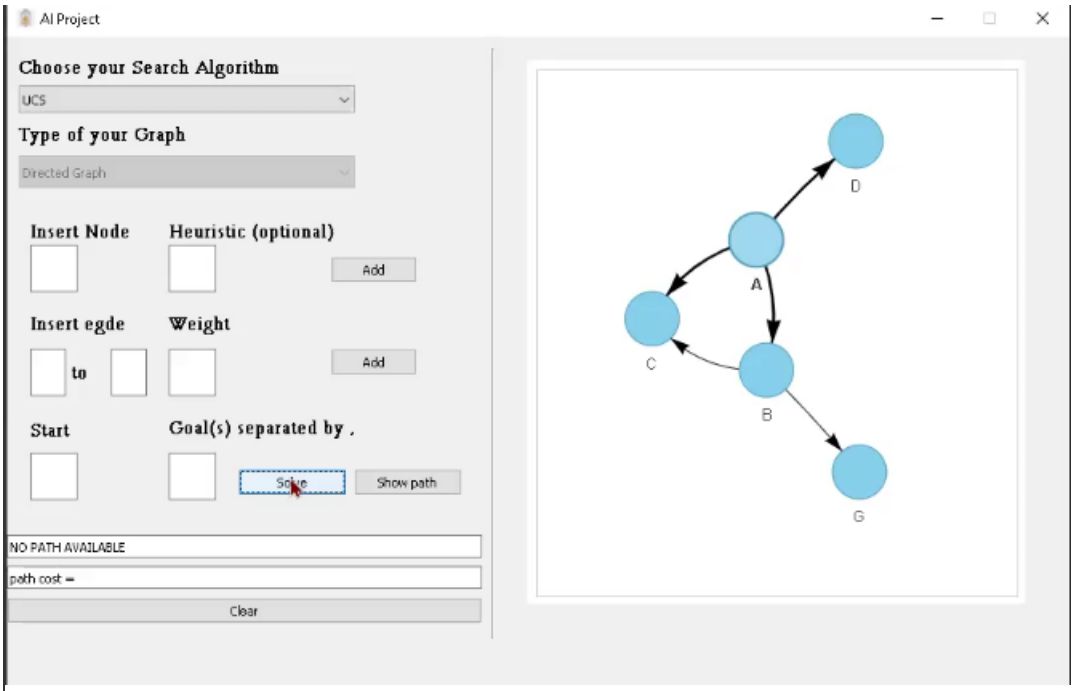
Exception when searching algorithm is not selected



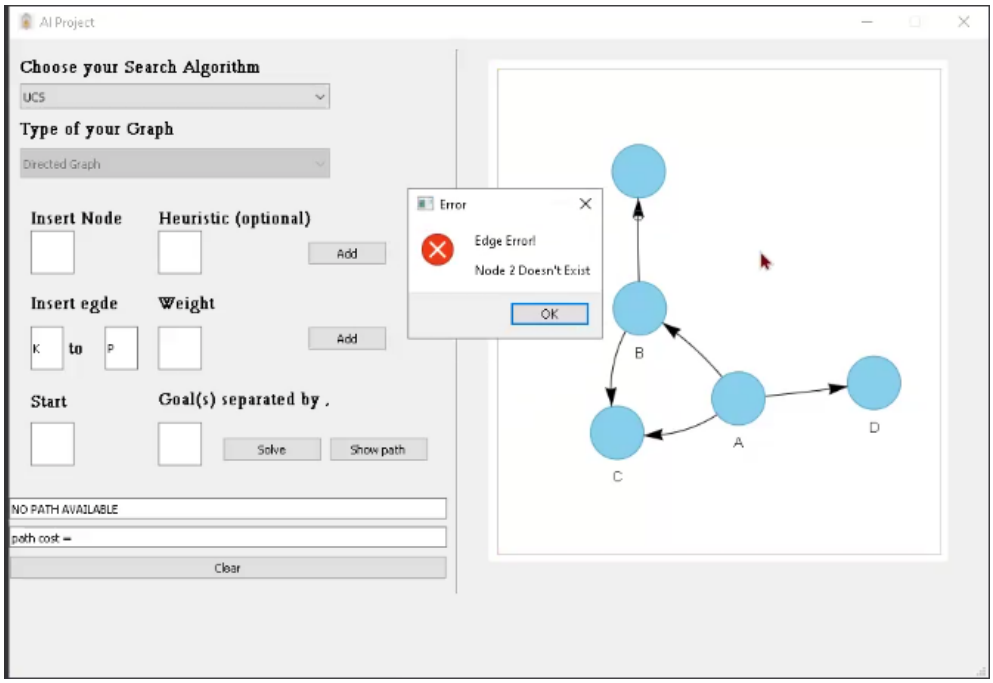
No path or cost is shown when start and goal nodes are not specified



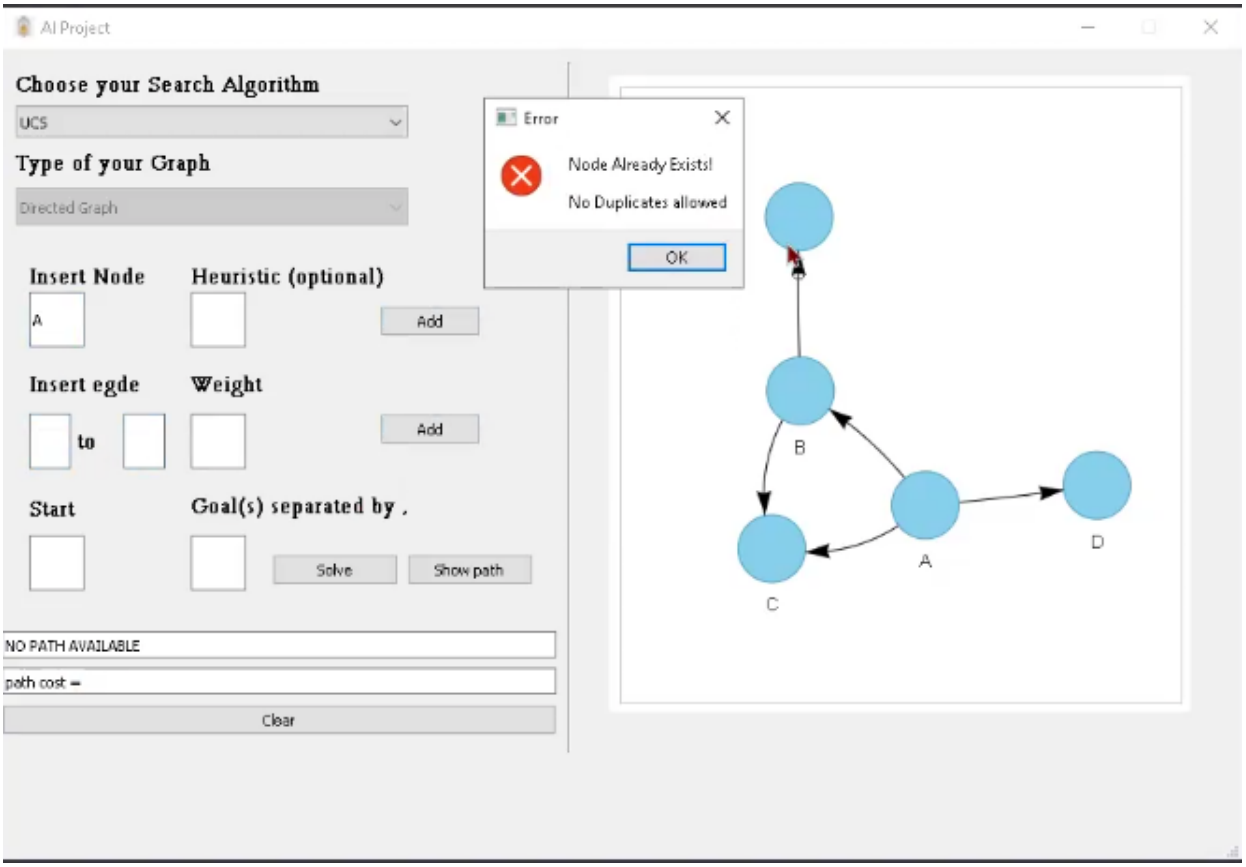
Exception when weight is not a number



(UCS) with no weight on edges will lead to no output path or cost



Exception when the edge doesn't exist (one of the two nodes doesn't exist)



Exception when inserting a node that already exists

DRIVE LINK FOR OUR PROJECT:

https://drive.google.com/file/d/1IT1HuPlJWZLayrlcGkte4NAfa8UjCjnw/view?usp=sharing