Ain Shams University, Faculty of Engineering

Problem Solver

User Manual

Version 1.0

05/20/2022

Table of Contents

List of Figures

1.   Introduction

This User Manual (UM) provides the information necessary for users to effectively use the Problem Solver Software.

1.1   Overview

The Problem Solver Windows Software designed to be used in solving Directed and undirected graphs using multiple graphs solving algorithms such as Breadth first and Depth First While having a simple yet attractive GUI that is both user friendly and delivers the necessary information.

2. Getting Started

After opening the software users get greeted with a welcome screen in which they can choose which type of graphs to solve (undirected or directed) then after selecting the type the get to enter graph edged and weights and finally the get to solve using multiple algorithm their graphs

2.1 Cautions & Warnings

While Using the Software One Should:

- Enter Input in correct Format
- Not Close the Software in the middle of execution
- Enter Input Before trying to solve
- Enter Heuristic in correct format

2.2 Set-up Considerations

The Software was setup as to run without needing any dependencies on any windows device.

2.3 Accessing the Software

To access the software users must run the provided exe file and the software should startup without any issues

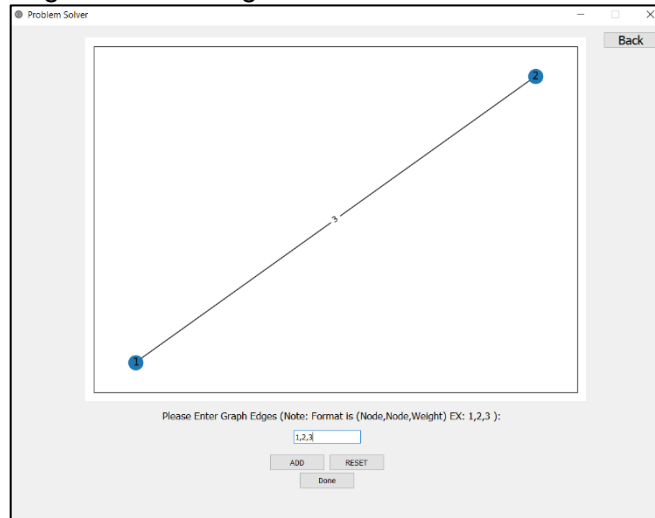## 2.4 Software Organization & Navigation

The software consists of Three Main Screens a Homepage, an Edge Insertion Page and a Solving page, The software also has a popup for the solution and a dialog box for inputting multiple goal nodes.
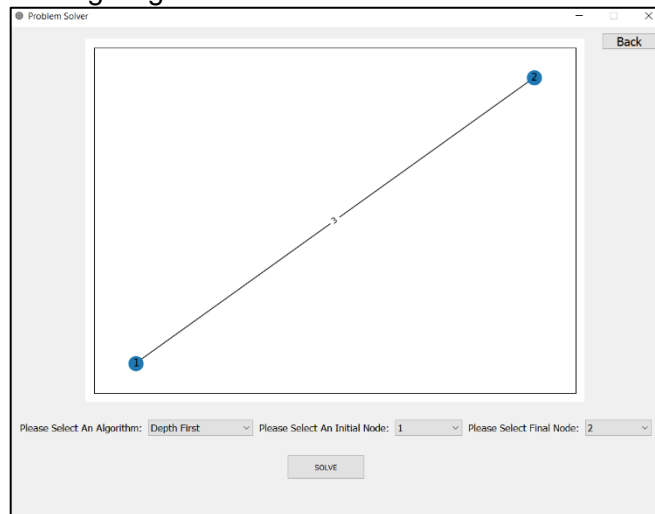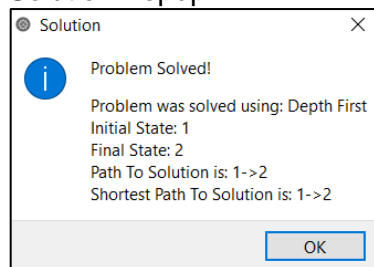
- Homepage

Figure 1

- Edge Insertion Page

Figure 2

- Solving Page

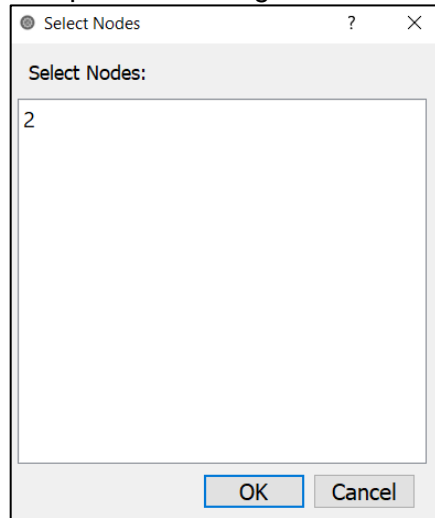

Figure 3

- Solution Popup

Figure 4

- Multiple Goal Dialog box

Figure 5

2.5   Exiting the Software

To exit the Software users can press the exit button on the software after finishing with their work
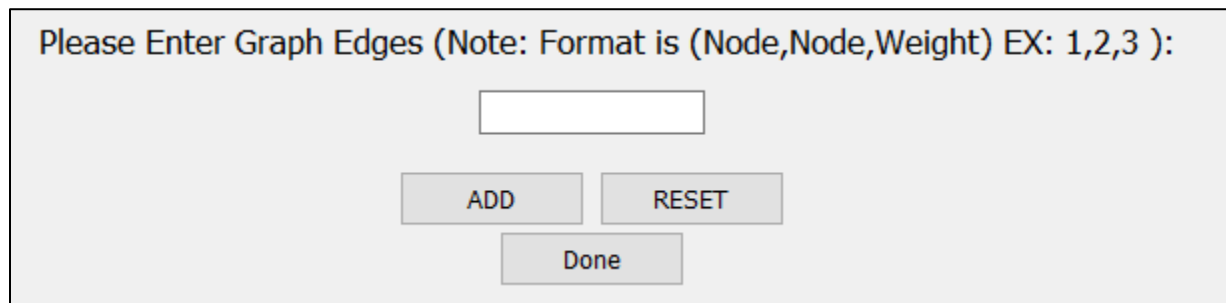
3. Using the Software

Features:

- Inputting Edges
- Resetting Graph
- Live Graph Preview
- Inputting Multiple Goals
- Inputting Heuristic
- Solving Graph
- Live Visualization of Algorithms

3.1 Inputting Edges

To use this function, navigate to the Edge Insertion Page using any of the two buttons from the Homepage and enter edges in the text field shows in the page then click add
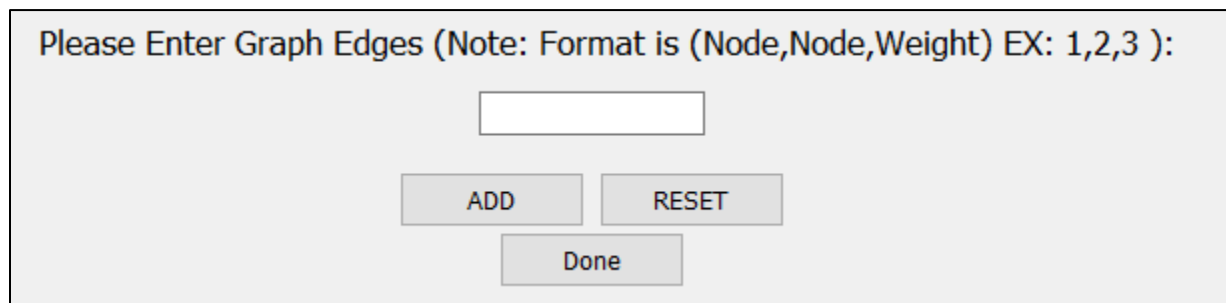

Figure 6

3.2 Resetting Graph

To use this function, navigate to the Edge Insertion Page using any of the two buttons from the Homepage and then click reset
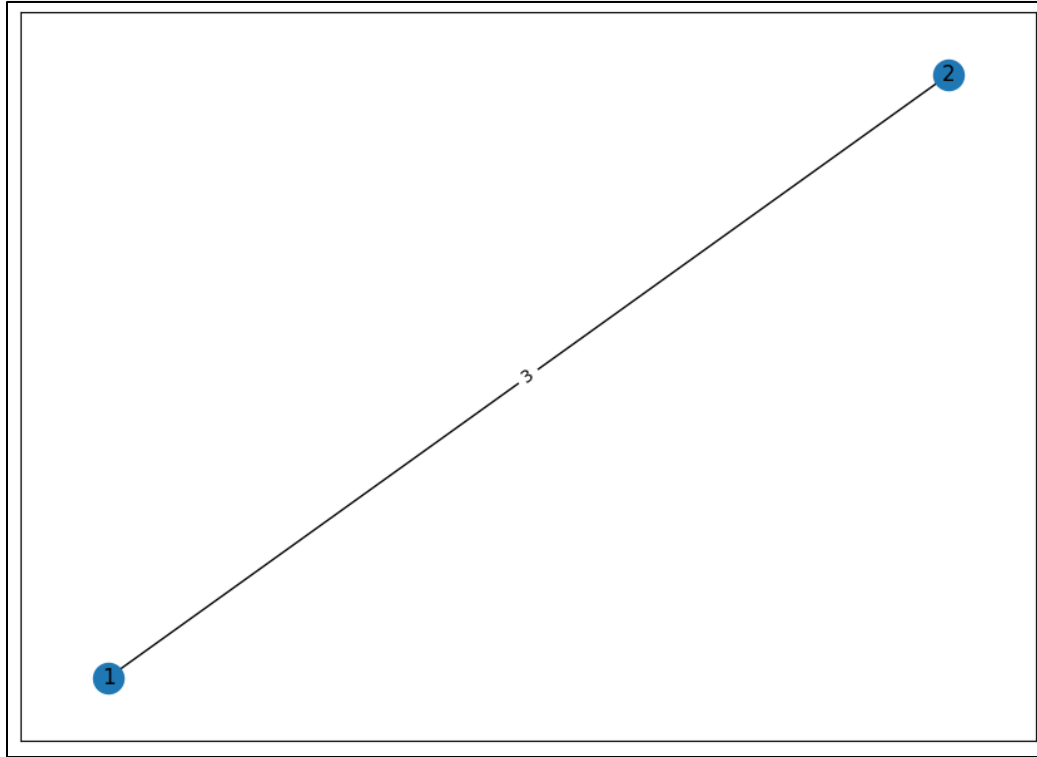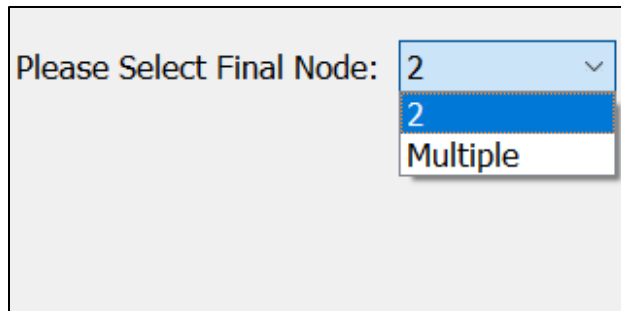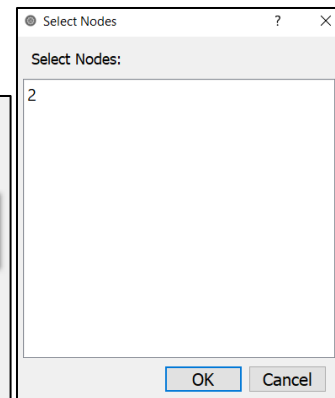

Figure 7

3.3 Live Graph Preview

When users add edges, these edges are shown in the preview canvas found in the Edge insertion page and the Solving page
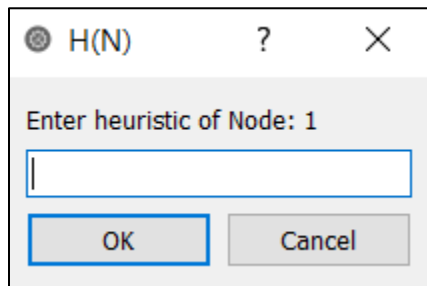

Figure 8

3.4 Inputting Multiple Goals

To use this function, navigate to the Solving Page after inserting edges by pressing the done button then when choosing final node, you can select multiple from the dropdown menu which will prompt you with the node selection dialog box.

Figure 9   Figure 10

3.5   Inputting Heuristic

To use this function, simply choose any algorithm that uses Heuristic values in their computation from the drop-down menu in the Solving page and you will be prompted with a popup to insert each node's heuristic individually.
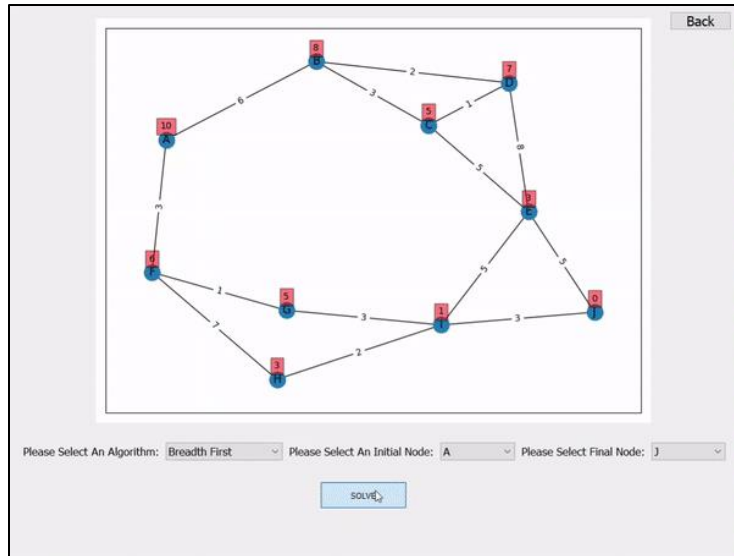

Figure 11

3.6   Solving Graph

To use this function, simply click on solve after selecting Algorithm and initial and final nodes from the drop-down menus in the Solving page.
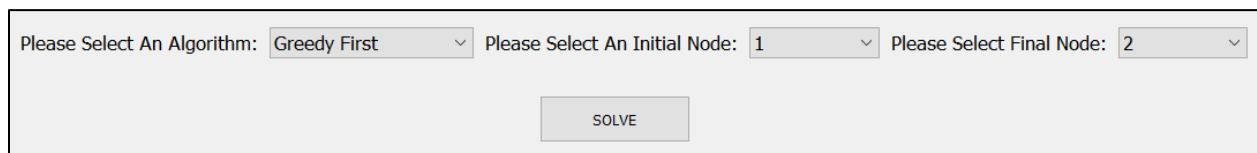
Figure 12

3.7   Live Visualization of Algorithms

When users solve their graph the graph preview is updated in real time with the steps that the algorithm use in its computation
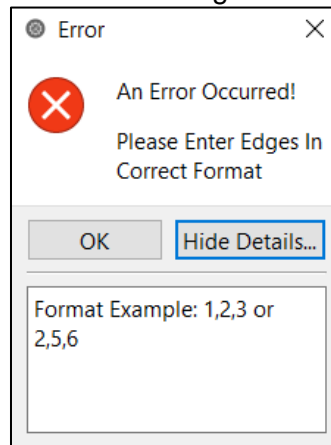
Figure 13

4. Troubleshooting & Support

We have implemented error handling in the software as to alert the users when they input an erroneous command
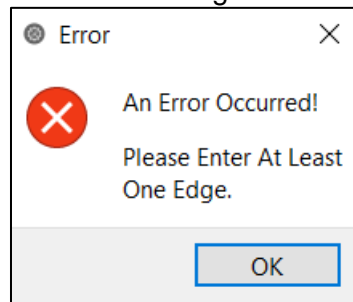
4.1 Error Messages

Our software has three main error messages:

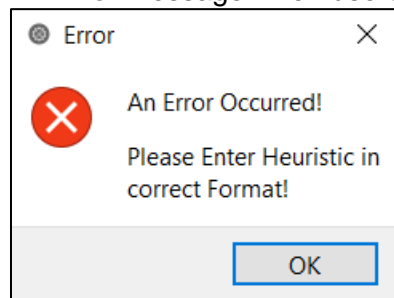- An Error message when users input edges in incorrect format

Figure 14

- An Error message when users try to solve a graph without adding any edges

Figure 15

- An Error message when users input Heuristic in incorrect format

Figure 16

4.2   Support

For any Software related support users can reach out using the official email:

officialzerocode@gmail.com