Phase 2 User Guide

CSE 360

Fall 2018

Mohit Doshi, Wesley Guerra, Kathryn Rawn, Shubham Mehta

TABLE OF CONTENTS

INTRODUCTION

Phase 2 of the team project consists of a program which analyzes a network diagram and gives the user options to determine all paths in the network, display only critical paths, save network information into a text file, and change the duration of any previously entered activities. This document details how to go about using and understanding the program.

- The overview of the program provides program information in detail, describing it's intended uses and functions.

- "Installation" provides program requirements and step-by-step instruction for installation.

- "Getting Started" provides a step by step format in how to generate a network diagram and ultimately generate a report containing network information.

- The User Interface Overview depicts user options in greater detail.

- "Example Runs" shows examples of successful execution and possible error messages.

- "Restarting" provides information regarding how to restart the program.

- "Ending the Program" provides information regarding how to exit the program.

OVERVIEW OF THE PROGRAM

The program requires Java to run. The Preferred IDE (Integrated Development Environment) is Eclipse. The program inputs activities and lists out all possible paths in the network in descending order of duration. It also gives the option to display all of the critical paths, change the duration for an activity, and save all of the paths and activities into a user-defined text file.

When the program starts up, the user interface displays empty text fields where the user enters the corresponding data, and then clicks on the Add Button to enter the data. The Compute Button performs the computations and displays the Output. Any errors occuring in the input will display an error message and require the user to start over. Error checking looks for faulty user inputs, incomplete node connections, and dependency cycles. The About and Help buttons display program information to the user. The Restart Button prompts the user to start over with the program, while the Quit Button ends the program. After a successful computation has been done, Generate Report, Change Duration, and Display Critical Paths Buttons will appear. The Generate Report Button saves network information into a user defined text file. The Change Duration Button allows a user to edit the duration of an activity. The Display Critical Paths Button generates a list of all the critical paths in the network.

INSTALLATION

System Requirements:-

- A computer running Windows 7 or higher, MAC OS X, or Linux.

- A version of Java installed (Version 5 or higher) (https://www.java.com/download/).

- An IDE (Integrated Development Environment) to execute the program (recommended: Eclipse - Version 4.0 or higher - https://www.eclipse.org/downloads/packages/).

Installation and setup:-

1. Download the .jar file for the project.

2. Upon opening the .jar file, the java program will load in the preferred IDE.

3. Compile the program to ensure that it builds.

4. Run the program to execute it and start the project application.

GETTING STARTED

1. Once the program is loaded in the IDE, run the program to execute it.

2. A GUI window will appear displaying the entire User Interface.

3. The Help Button can be pressed anytime to access program information, and instructions.

4. To enter data, look at the three text fields and enter the corresponding data (name, dependencies, and duration) for an activity.

5. Click on the Add Button to enter the activity into the network.

    a. The duration must be an integer.

    b. Failing to enter the name or duration will result in the activity not being added and an error message being displayed. In this instance, re-enter the data with correct and complete information.

6. To generate the network paths click on the Compute Button. All the paths in the network will be displayed in the Output window in descending order of duration.

7. Three new buttons will appear: Generate Text File, Compute Critical Path, and Change Duration

    a. Click on Generate Report to save all paths and activities into a text file.

    b. Click on Display Critical Paths to display all critical paths.

    c. Click on Change Duration to edit the duration of a specified activity.

8. If any of the entered activities were not completed or accurately linked, an error message will be displayed, and the program will restart.

9. To exit the program at any time click on the Quit button.

USER INTERFACE OVERVIEW

Starting View Screenshot
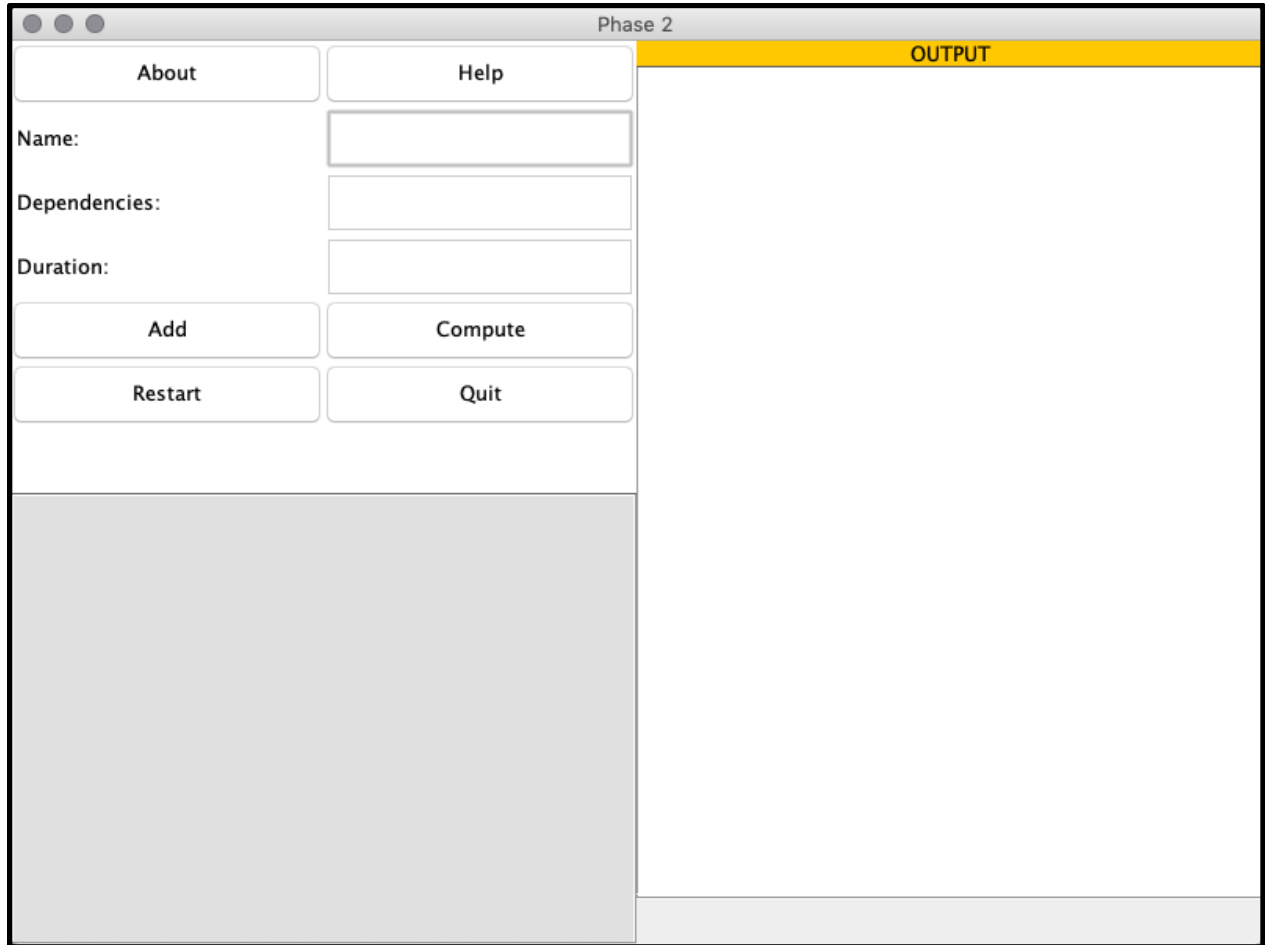
The GUI displayed consists of a frame with three panels. The first panel is located at the top left and consists of all the initial buttons, labels, and text fields in the program. The About and Help buttons are located at the top. The text fields for Name, Dependencies, and Duration are empty. The Add and Compute buttons are right below the labels and text fields, while the Restart and Quit buttons are below the Add and Compute buttons. The Generate Report button only appears after a successful computation.

The second panel is the output window located on the right side of the GUI. It consists of a text area which does not allow for user input and displays the Display Critical Paths and Change Duration buttons only upon a successful computation.

The third panel consists of the first panel as well as the text area below the first panel. The text area is used to display information and error messages to the user.

<u>About Button</u>

The About Button displays project information such as version number and copyright

information.

<u>Help Button</u>

The Help Button displays a condensed version of the user manual describing all buttons, errors,

and functionalities.

Sample Input and Add Button

The Add Button adds the entered values to the network.

Compute Button and Output

Clicking the Compute Button will generate a list of all paths in the network diagram and display

it in the Output Window, along with a message in the comments window. Once the network

paths have been successfully computed, the following buttons will appear: Generate Report,

Display Critical Paths, and Change Duration.

Display Critical Paths Button

	Phase 2	

OUTPUT

About	Help

Name:

Dependencies:

Duration:

Add	Compute
Restart	Quit
Generate Report	

Successfully Computed!

Critical Path   Duration

A B C D E   14

Display Critical Paths	Change Duration

When the Display Critical Paths Button is clicked, all critical paths in the given network will be displayed in the output window.

Change Duration Button

When the Change Duration Button is clicked, pop-up dialog windows will appear in order to obtain an activity name and a new duration value. Once the user has successfully completed the Change Duration process, the given activity will have a specified new duration and a "Duration Changed!" message will appear in the comments window.

<u>Generate Report Button</u>

● ● ●	Phase 2	

About	Help

OUTPUT

Critical Path	Duration
A B C D E	14

Name: _____

Dependencies: _____

Duration: _____

Add	Compute

Restart	Quit

Generate Report	

Report Successfully Generated!

Display Critical Paths	Change Duration

When the Generate Button is clicked, a pop-up window will appear asking the user to name the report they wish to create. Once, this information is obtained, a text file will be created containing the report name, path and activity information, along with date and time of creation. A "Report Successfully Generated!" message will appear in the comments window.

Restart Button

Clicking on the Restart Button deletes all previously entered data and restarts the program so that

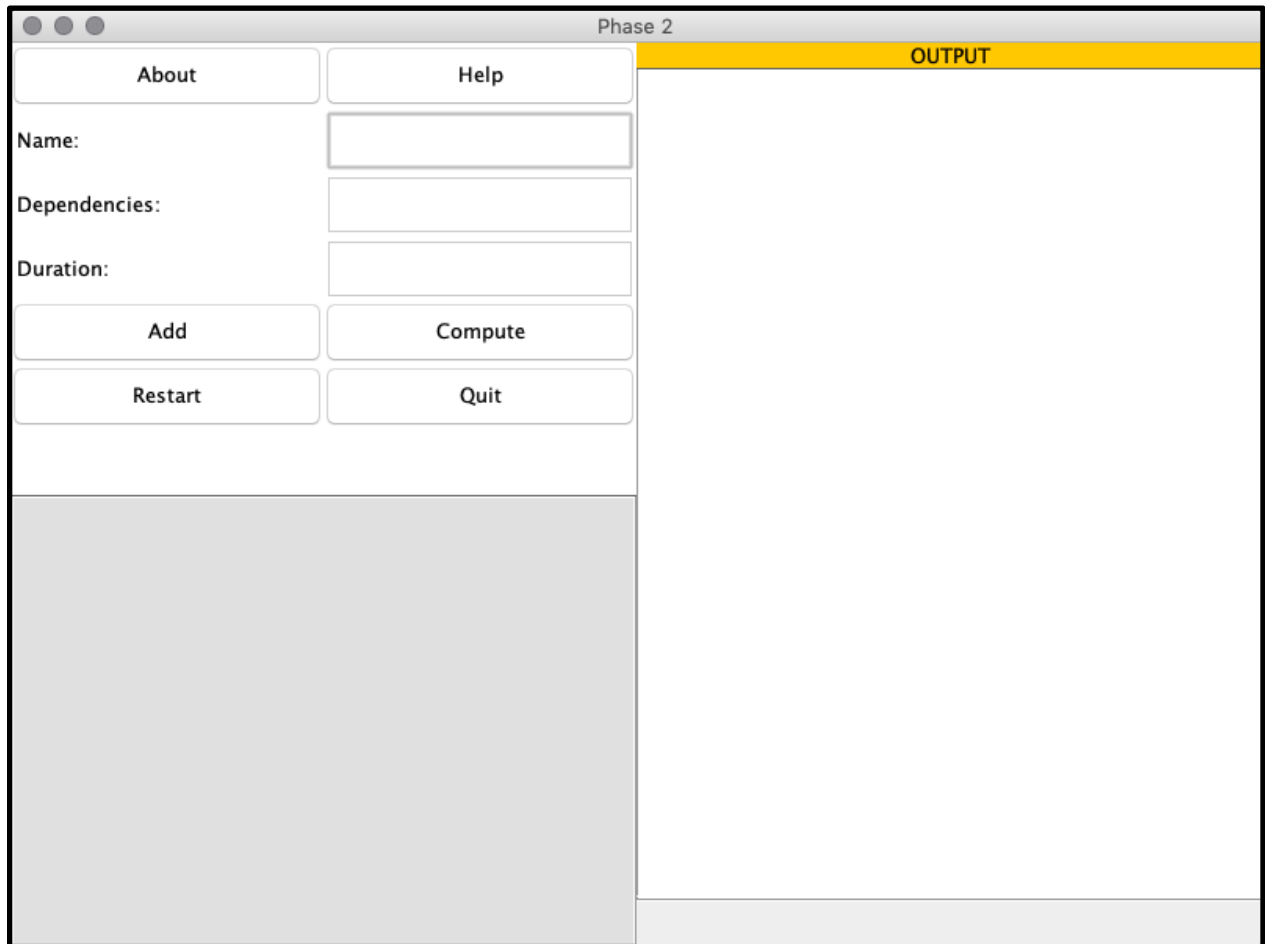the user may start over.

Quit Button

Clicking on the Quit Button exits the program.

EXAMPLE RUNS

- Successful execution example

1. Starting the application

    ❖ When the program is executed the starting view is displayed.

2. Adding activity information

   ❖ The correct input requires an integer value for duration, and a character or set of
     characters for name.

   ❖ Clicking the Add Button after entering the corresponding values in the text fields will add
     the data into the network.

❖ After the Add Button is clicked, if the entered values have no errors, a "Successfully

Added" message is displayed in the comments window.

3. Computing network paths

   ❖ After successfully adding all activities in the network, the Compute Button should be
      clicked.

   ❖ If all the entered data was accurate and error-free, a list of all the paths in the network
      diagram will be displayed in the Output Window in descending order of duration.

		Phase 2		

OUTPUT

About	Help	Path		Duration
Name:		A B C D E		14
Dependencies:		A C D E		10
Duration:		A C E		6
Add	Compute			
Restart	Quit			
Generate Report				

Successfully Computed!

Display Critical Paths	Change Duration

4. Changing the duration of an activity

❖ To change the duration of any given activity, press the Change Duration Button. A pop-up will appear asking for the name of the activity. The user must enter the name of the activity they wish to edit in the given text box and press OK.
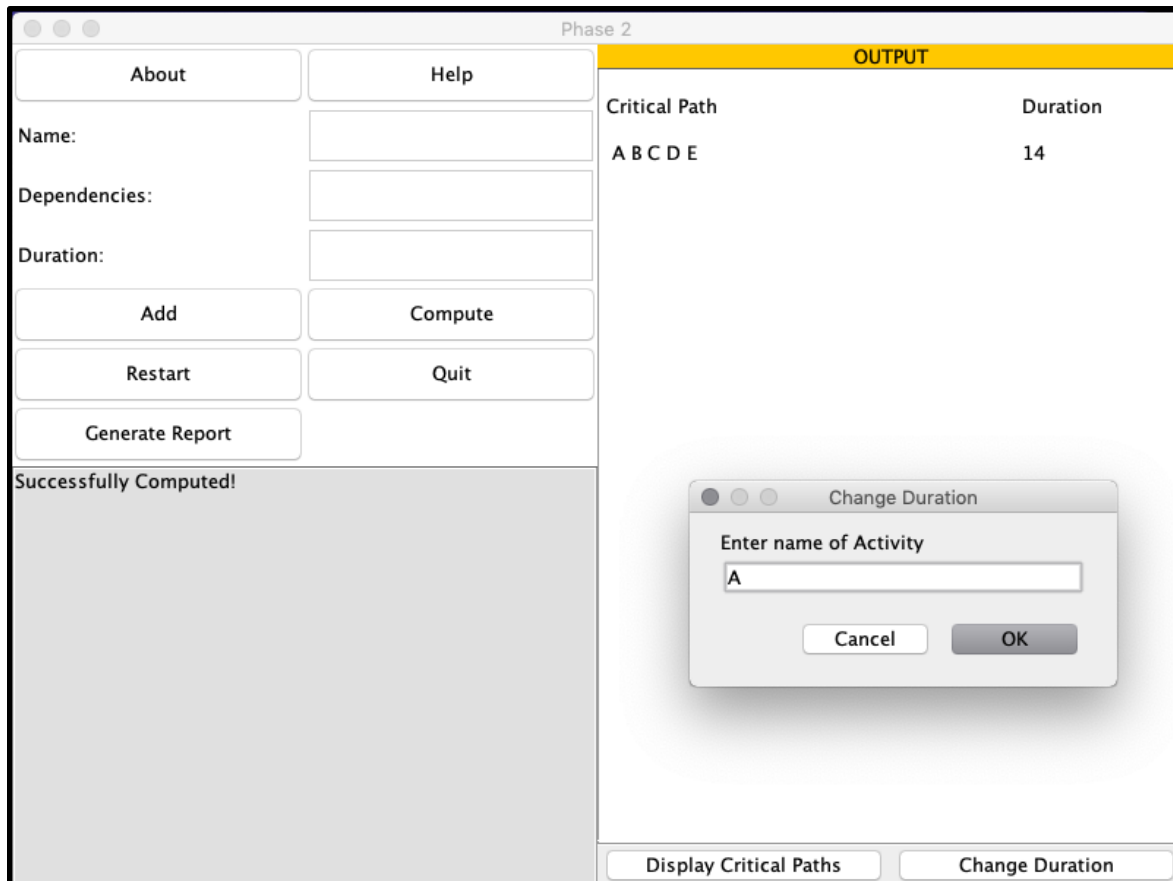
❖ If the given activity name matches one in the existing network, the user will then be asked to enter the activity's new duration. Once the new duration is entered into the given text box, the user must press OK.
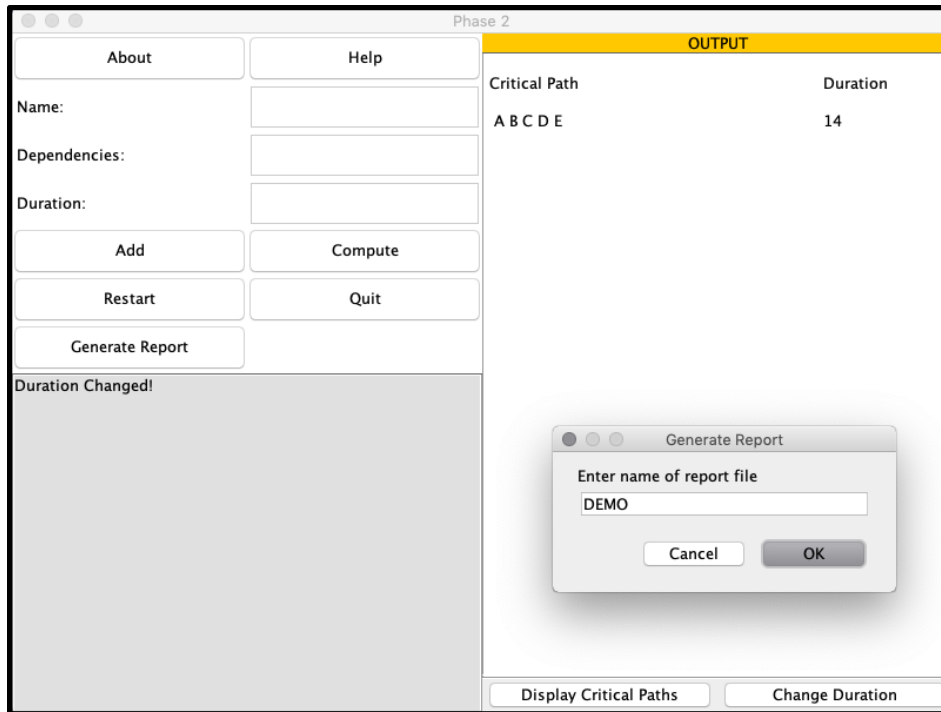
❖ If an integer is entered, the activity duration will be changed and the message "Duration

Changed!" will appear in the comments window.
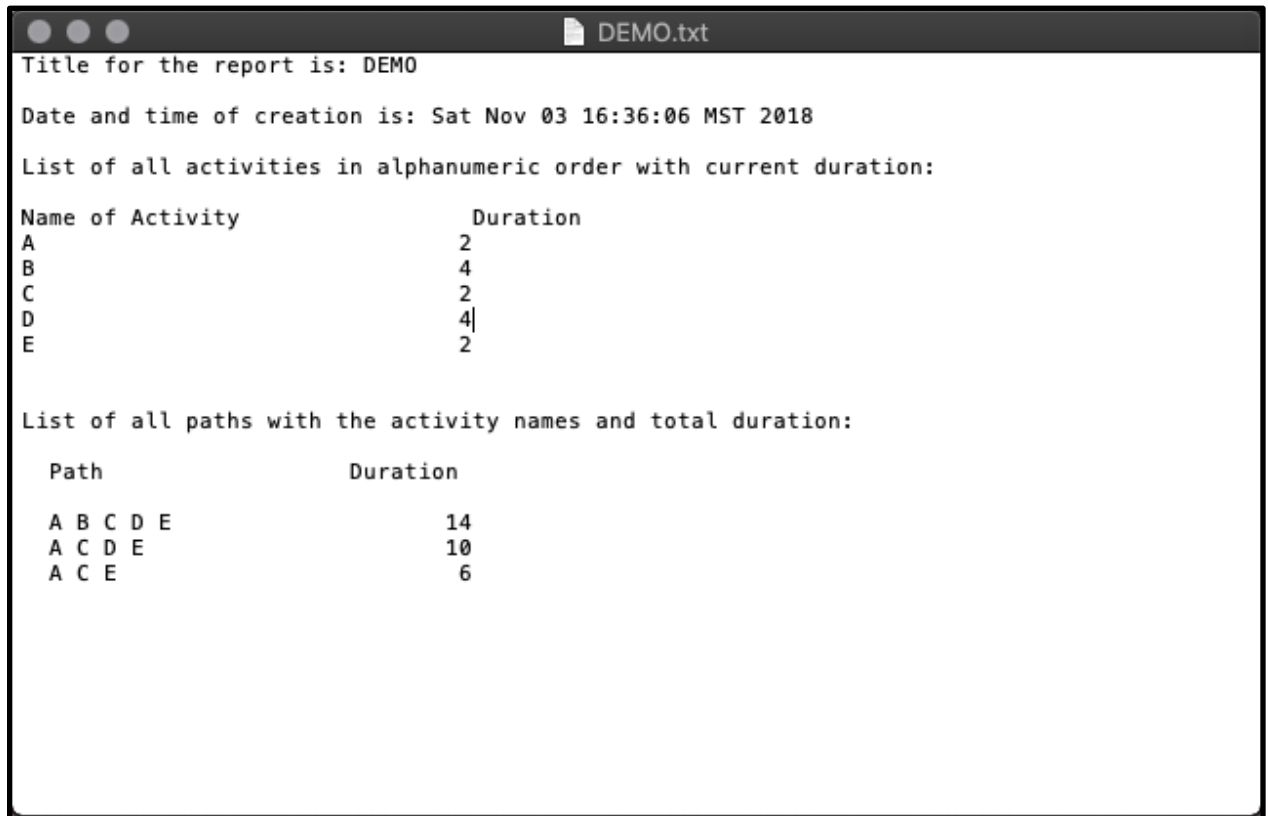
5. Generating a report

❖ In order to generate a report listing network information, the user must click the Generate Report Button. A pop-up will window will appear asking the user to name the report file.

❖ After the user inputs a name and selects OK a message should appear in the comments window indicating that a report has been successfully generated.
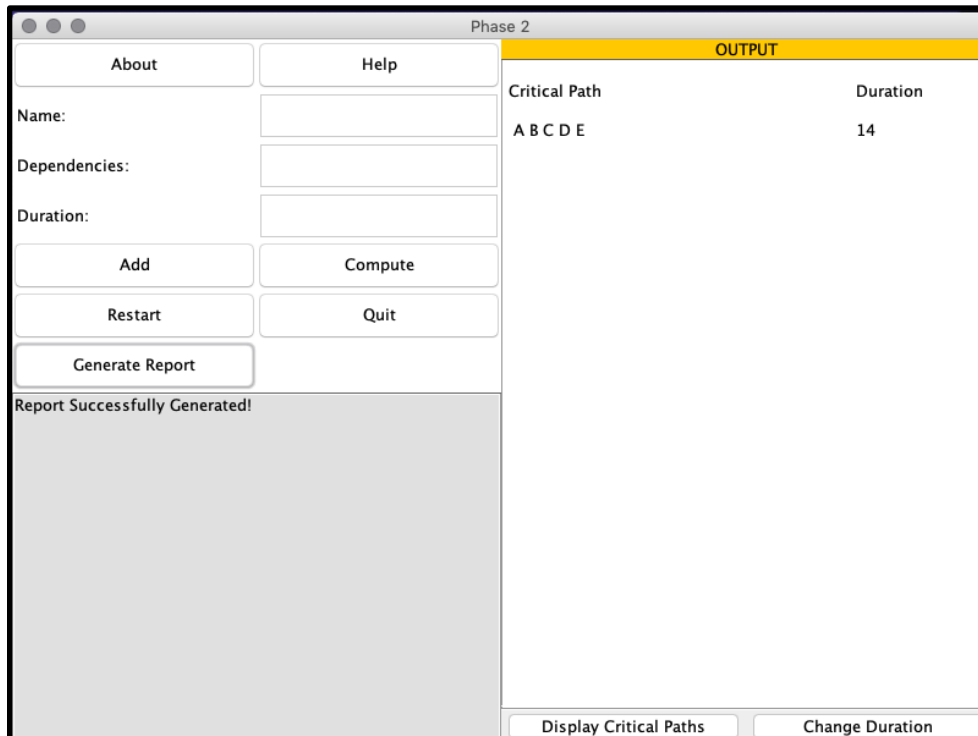
❖ The report will be given the specified name and the text file will contain information regarding path and activity information, as well as date and time of creation.

```
●●●                              📄 DEMO.txt
Title for the report is: DEMO

Date and time of creation is: Sat Nov 03 16:36:06 MST 2018

List of all activities in alphanumeric order with current duration:

Name of Activity                Duration
A                                  2
B                                  4
C                                  2
D                                  4|
E                                  2


List of all paths with the activity names and total duration:

  Path                    Duration

  A B C D E                  14
  A C D E                    10
  A C E                       6
```

- Examples of error conditions and error messages

1. Incorrect input for a particular text field

   ❖ If a non-integer value or an empty Name field or an empty Duration field is added
     with the Add Button, the given activity is not added to the network and an error
     message is displayed.

```
● ● ●                              Phase 2
                                                        OUTPUT
┌──────────────────────┐  ┌──────────────────────┐
│        About         │  │         Help         │
└──────────────────────┘  └──────────────────────┘

Name:                      A

Dependencies:              B,C

Duration:                  2.45

┌──────────────────────┐  ┌──────────────────────┐
│         Add          │  │       Compute        │
└──────────────────────┘  └──────────────────────┘
┌──────────────────────┐  ┌──────────────────────┐
│       Restart        │  │         Quit         │
└──────────────────────┘  └──────────────────────┘

Invalid input, duration must be an integer!
```

2. Incomplete connections

❖ If there is an incomplete connection or connections in the network diagram, an error will

be displayed and the program will restart.

3. Network Cycle

❖ If the activities are linking to form a cycle, an error message is displayed, and the

program will restart.

4. Duration change request for nonexistent activity

❖ Upon pressing the Change Duration Button, the inputted activity name must match an

already existing activity in the network.

		OUTPUT
About	Help	

Phase 2

About	Help

Name:

Dependencies:

Duration:

Add	Compute
Restart	Quit
Generate Report	

Entered Activity does not exist!

Path   Duration

A B C D E   14
A C D E   10
A C E   6

Display Critical Paths	Change Duration

RESTARTING

Restart Button being clicked

Clicking the Restart Button will restart the program. All previously entered data is deleted and the starting view is loaded.

ENDING THE PROGRAM

Quit Button being clicked
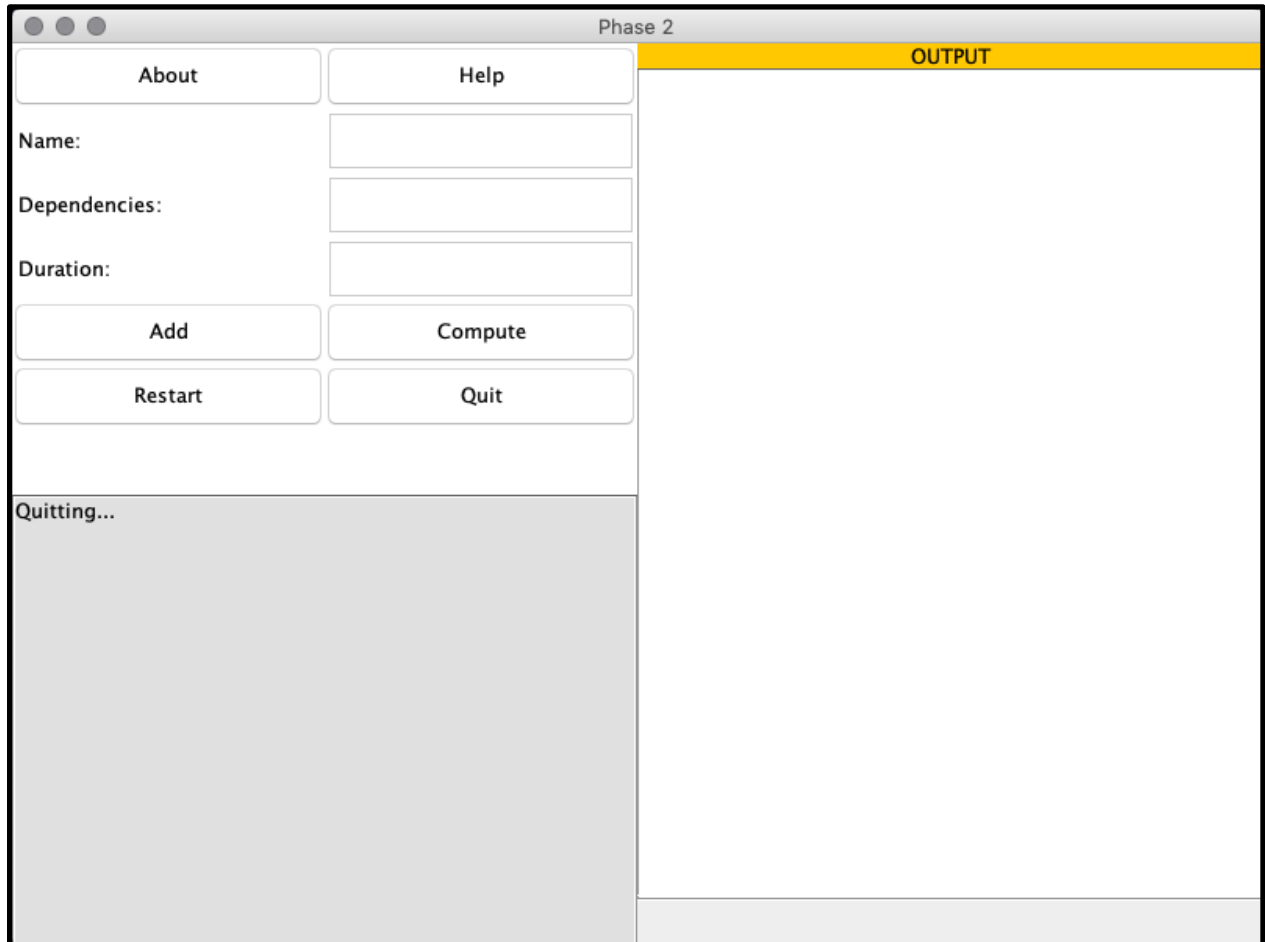
Clicking on the Quit Button ends the program and after a short delay, the GUI Window also

closes.