

Phase 2 User Guide

CSE 360

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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 occurring 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:-

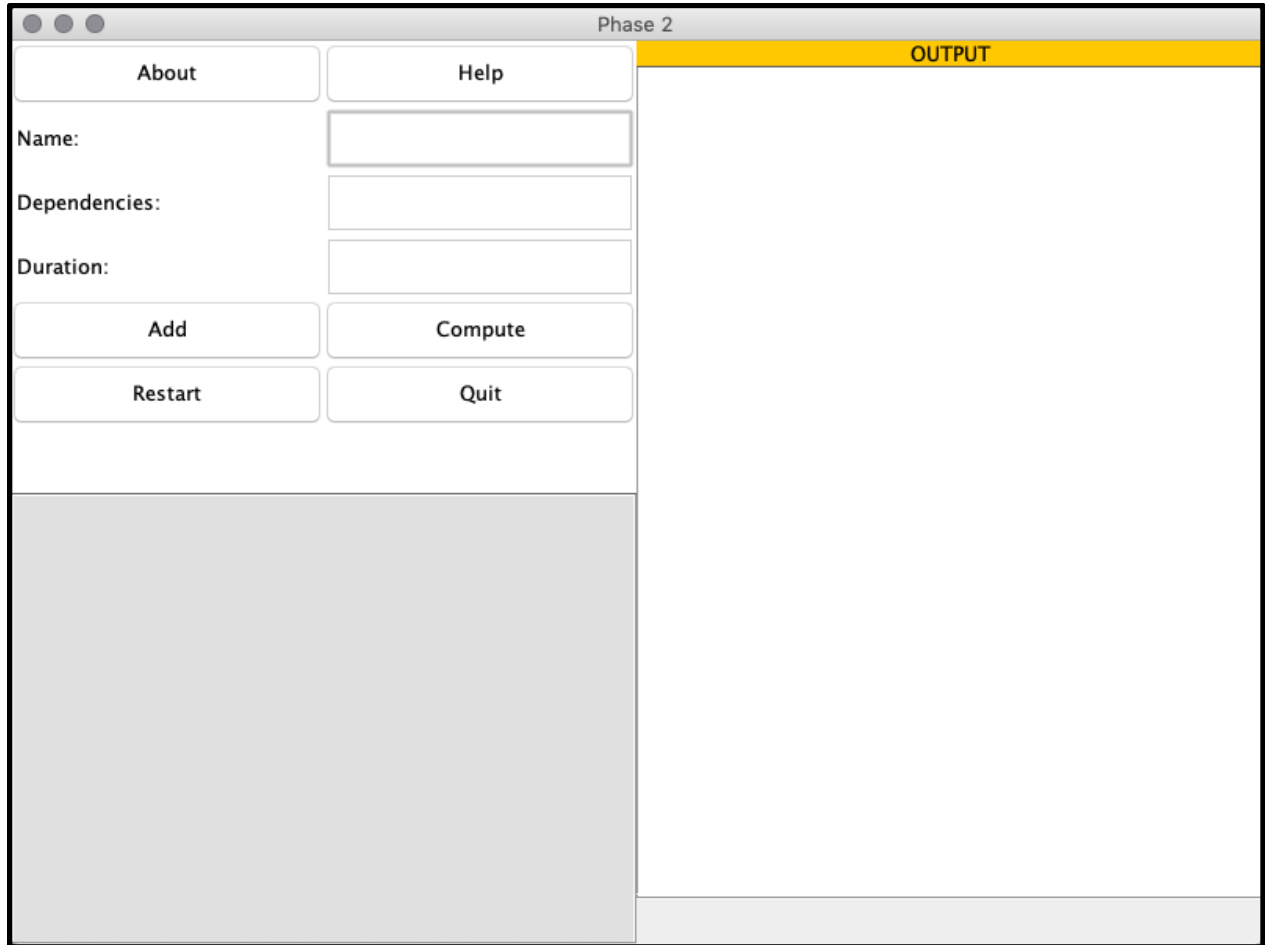
1. Download the .jar file for the project.
2. Upon opening the .jar file, the java program will load in the preferred IDE.
3. Compile the program to ensure that it builds.
4. Run the program to execute it and start the project application.

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.

About Button

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

The screenshot shows a window titled "Phase 2" with a standard macOS-style title bar (three red, yellow, and green buttons on the left). The window is divided into two main sections. The left section contains a form with the following elements:

- Two buttons at the top: "About" (highlighted) and "Help".
- Three input fields with labels: "Name:", "Dependencies:", and "Duration:".
- Four buttons arranged in a 2x2 grid: "Add", "Compute", "Restart", and "Quit".
- A large gray rectangular area at the bottom containing the following text:
CSE 360 Phase 2
Version 2.0.0
2018–2018. Group 1.
Kathryn Rawn, Mohit Doshi, Wesley Guerra and Shubham Mehta
All Rights Reserved.

The right section of the window is a large white area with a yellow header bar labeled "OUTPUT".

Help Button

Phase 2

About Help

Name:

Dependencies:

Duration:

Add Compute

Restart Quit

OUTPUT

ABOUT
The following program analyzes a network diagram given by user and determines all of the paths in the network. To learn more about the project and the team, press the 'About' button.

ADDING AN ACTIVITY
To add an activity to the network diagram, enter the activity's dependencies (if any), and duration within the corresponding fields. If the activity has more than one dependency, separate dependencies with a comma (Ex: A,B). Once finished entering activity information, press the 'Add' button. If all information is inputted correctly, a 'Successfully Added' message should appear below. The activity will not be added and an error message will appear if any of the following occur:

- 1) The activity is not given a name.
- 2) The activity is not given a duration.
- 3) The duration is not written as an integer

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

Sample Input and Add Button

The screenshot shows a window titled "Phase 2" with a standard macOS-style title bar (three dots). The window is divided into several sections. At the top, there are two buttons: "About" and "Help". Below these, there are three input fields. The first is labeled "Name:" and contains the text "A". The second is labeled "Dependencies:" and is empty. The third is labeled "Duration:" and contains the text "5". Below these input fields, there are four buttons arranged in a 2x2 grid: "Add", "Compute", "Restart", and "Quit". To the right of the input fields and buttons, there is a large yellow rectangular area with the word "OUTPUT" written in black text. The bottom of the window is a large gray rectangular area.

The Add Button adds the entered values to the network.

Compute Button and Output

The screenshot shows a software interface titled "Phase 2". On the left is a form with the following elements:

- Buttons: "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report".
- Input fields: "Name:", "Dependencies:", and "Duration:".

Below the form, a message box displays "Successfully Computed!".

On the right is an "OUTPUT" window with a table showing the results of the computation:

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

At the bottom of the output window are two buttons: "Display Critical Paths" and "Change Duration".

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

The screenshot shows a software window titled "Phase 2". On the left is a form with the following elements:

- Buttons: "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report".
- Input fields: "Name:", "Dependencies:", and "Duration:".

Below the form, a message box says "Successfully Computed!". On the right is an "OUTPUT" window with a table:

Critical Path	Duration
A B C D E	14

At the bottom of the window are two buttons: "Display Critical Paths" and "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

The screenshot shows a software window titled "Phase 2". The window is divided into several sections. At the top, there is a yellow header bar labeled "OUTPUT". Below this, on the left side, there is a panel with buttons: "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report". To the right of these buttons are three input fields labeled "Name:", "Dependencies:", and "Duration:". Below the input fields, there is a large grey rectangular area with the text "Duration Changed!" in the top left corner. At the bottom right of the window, there are two buttons: "Display Critical Paths" and "Change Duration".

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.

Generate Report Button

The screenshot shows a software window titled "Phase 2". On the left, there is a control panel with buttons for "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report". Below these buttons, a message box displays "Report Successfully Generated!". To the right of the control panel is a large area labeled "OUTPUT" with a yellow header. This area contains a table with two columns: "Critical Path" and "Duration". The table shows a single row with the critical path "A B C D E" and a duration of "14". At the bottom right of the window, there are two buttons: "Display Critical Paths" and "Change Duration".

OUTPUT	
Critical Path	Duration
A B C D E	14

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

Phase 2

About Help

Name:

Dependencies:

Duration:

Add Compute

Restart Quit

Restarted.

OUTPUT

Clicking on the Restart Button deletes all previously entered data and restarts the program so that the user may start over.

Quit Button

Phase 2

About Help

Name:

Dependencies:

Duration:

Add Compute

Restart Quit

OUTPUT

Quitting...

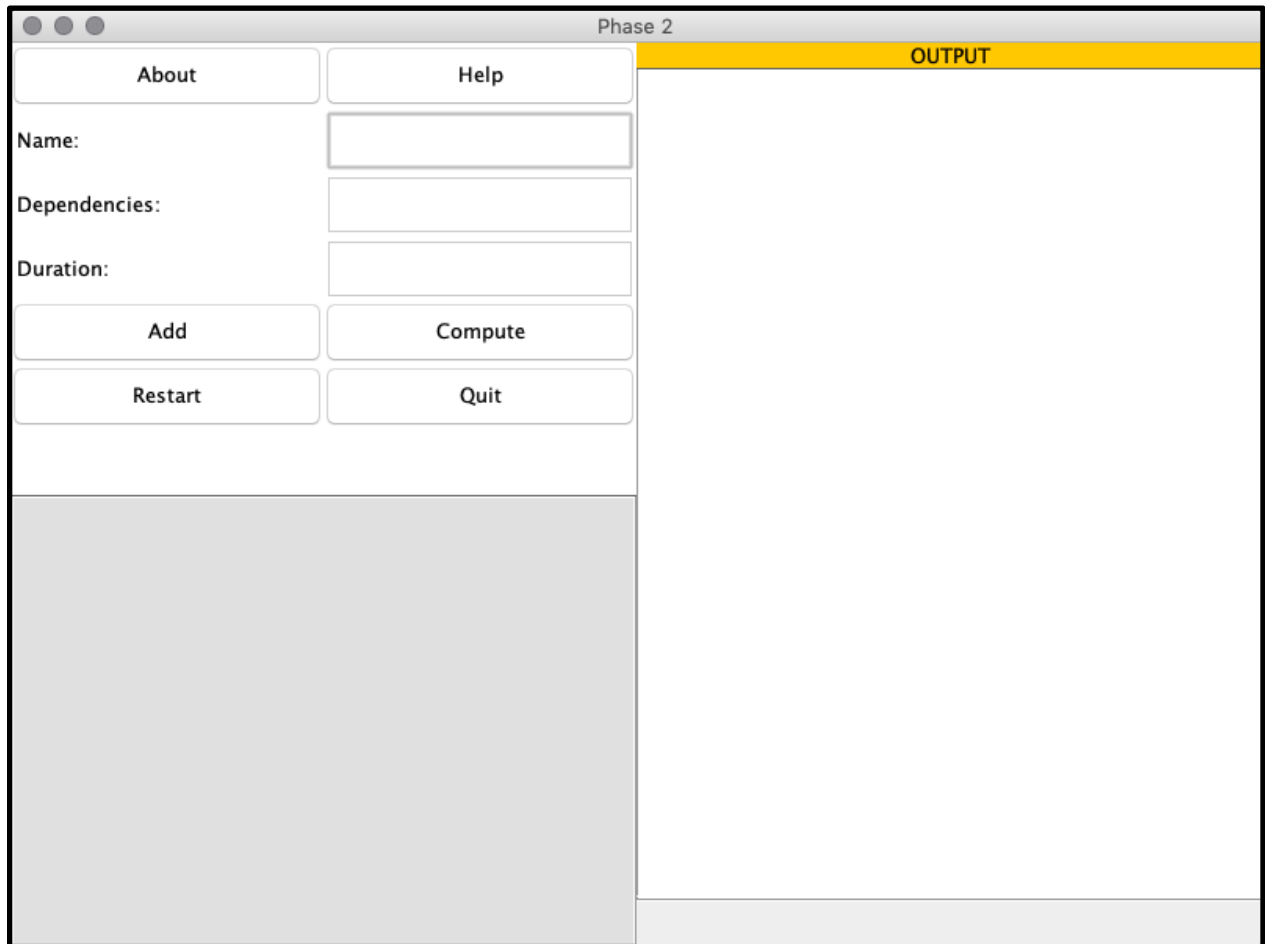
Clicking on the Quit Button exits the program.

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.

The screenshot shows a window titled "Phase 2". The window is divided into two main sections. The left section contains a form with the following elements:

- Buttons: "About" and "Help" at the top.
- Form fields: "Name:" with the value "A", "Dependencies:" (empty), and "Duration:" with the value "5".
- Buttons: "Add", "Compute", "Restart", and "Quit" arranged in two rows.

The right section is a large area labeled "OUTPUT" at the top, which is currently empty. The bottom of the window is a solid gray bar.

- ❖ After the Add Button is clicked, if the entered values have no errors, a “Successfully Added” message is displayed in the comments window.

Phase 2

About Help

Name:

Dependencies:

Duration:

Add Compute

Restart Quit

A has been successfully added.

OUTPUT

3. Computing network paths

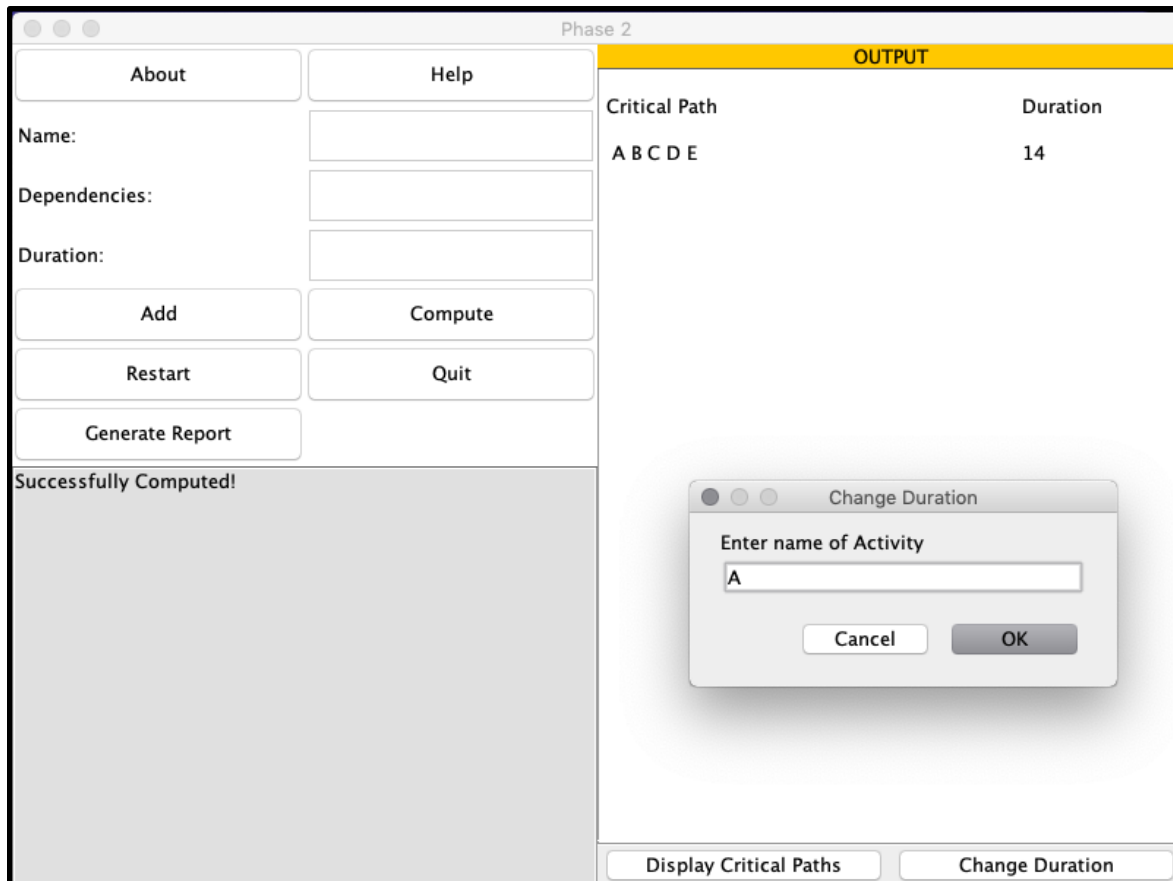
- ❖ After successfully adding all activities in the network, the Compute Button should be clicked.
- ❖ If all the entered data was accurate and error-free, a list of all the paths in the network diagram will be displayed in the Output Window in descending order of duration.

The screenshot shows a software window titled "Phase 2". On the left, there is a control panel with fields for "Name:", "Dependencies:", and "Duration:", each followed by an input box. Below these are buttons for "Add", "Compute", "Restart", "Quit", and "Generate Report". A status bar at the bottom left of this panel says "Successfully Computed!". On the right, the "OUTPUT" section is highlighted in yellow. It contains a table with two columns: "Path" and "Duration". The table lists three paths: "A B C D E" with a duration of 14, "A C D E" with a duration of 10, and "A C E" with a duration of 6. At the bottom right, there are two buttons: "Display Critical Paths" and "Change Duration".

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

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.

The main window, titled "Phase 2", contains a form on the left and an "OUTPUT" section on the right. The form has fields for "Name:", "Dependencies:", and "Duration:", each followed by a text input box. Below these are buttons for "Add", "Compute", "Restart", "Quit", and "Generate Report". A status message "Successfully Computed!" is displayed below the buttons. The "OUTPUT" section shows a table with two columns: "Critical Path" and "Duration". The table contains one row with the values "A B C D E" and "14".

A "Change Duration" dialog box is open, titled "Change Duration". It contains a text input field with the label "Enter duration of A" and the value "3". Below the input field are "Cancel" and "OK" buttons.

Critical Path	Duration
A B C D E	14

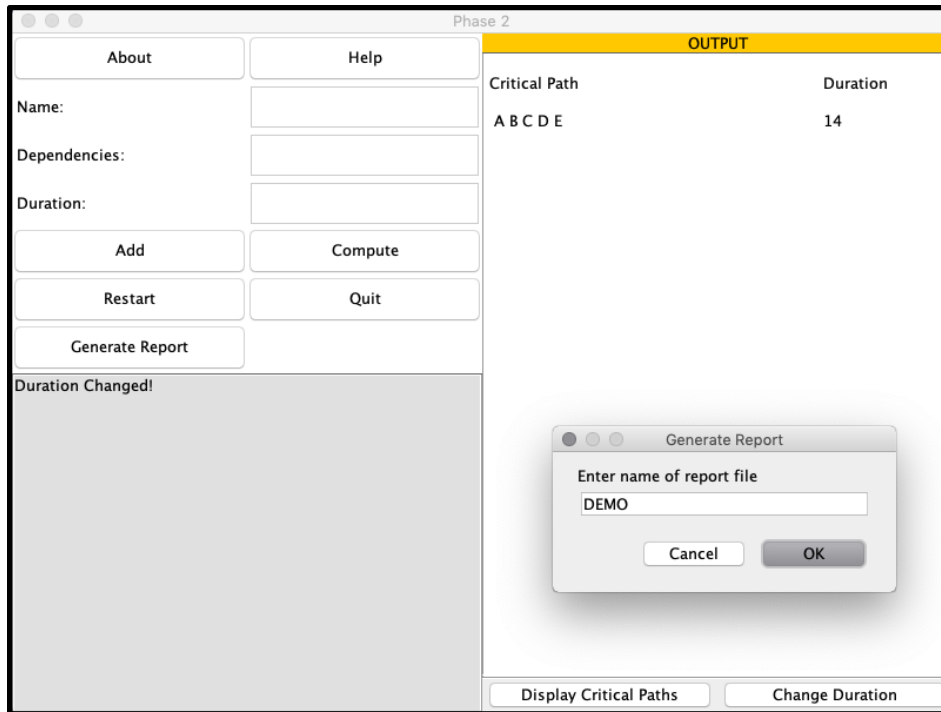
- ❖ If an integer is entered, the activity duration will be changed and the message “Duration Changed!” will appear in the comments window.

The screenshot shows a software window titled "Phase 2". The window is divided into several sections:

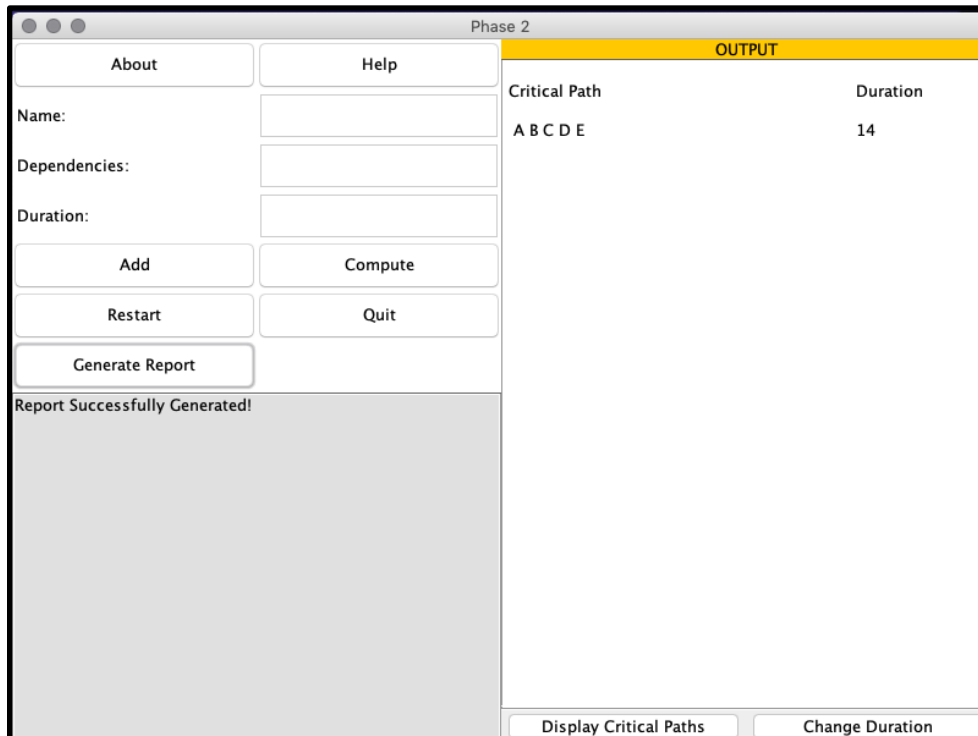
- Top Bar:** Contains the title "Phase 2" and a yellow bar labeled "OUTPUT".
- Left Panel:** Contains a series of buttons and input fields:
 - Buttons: "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report".
 - Input fields: "Name:", "Dependencies:", and "Duration:".
- Bottom Left:** A greyed-out area with the text "Duration Changed!".
- Bottom Right:** Two buttons labeled "Display Critical Paths" and "Change Duration".

5. Generating a report

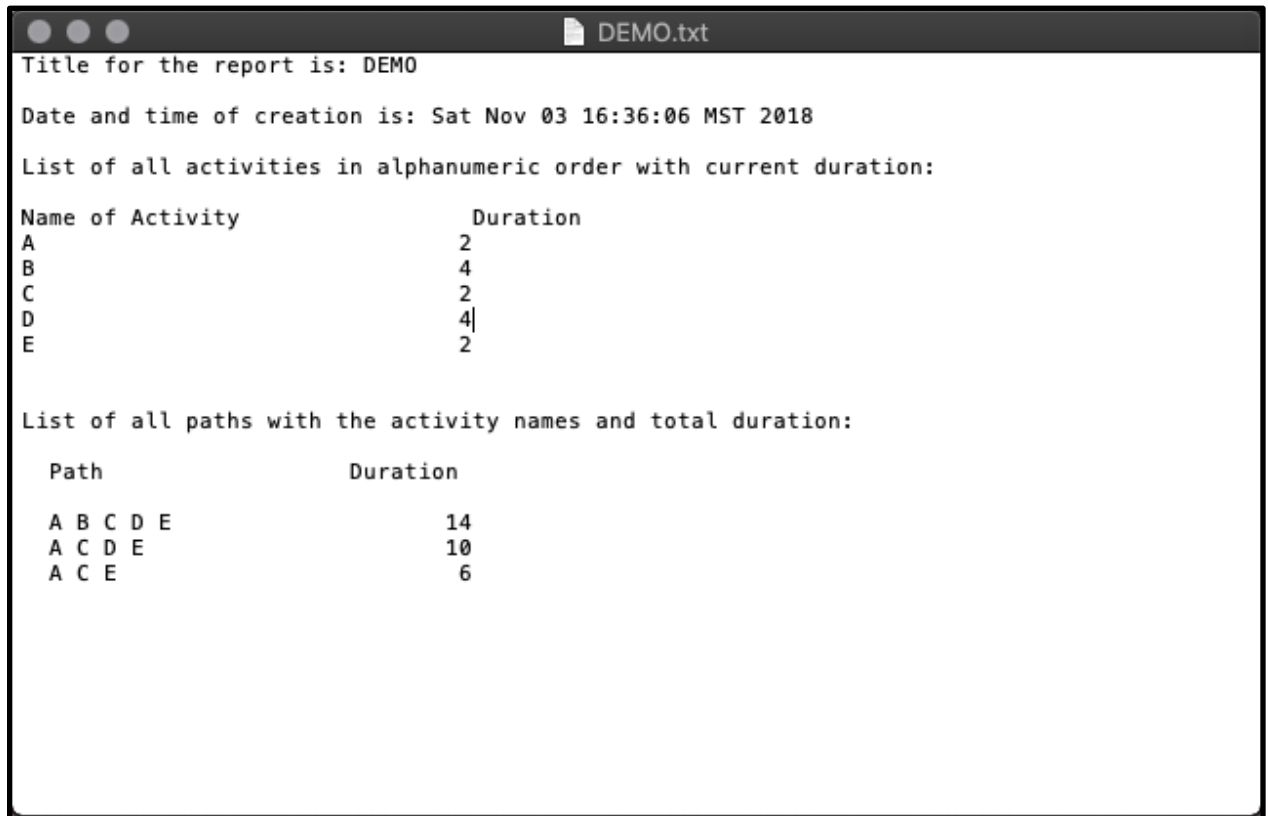
- ❖ In order to generate a report listing network information, the user must click the Generate Report Button. A pop-up window will appear asking the user to name the report file.



- ❖ 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.



```

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.

The screenshot shows a software window titled "Phase 2". The window is divided into several sections. At the top, there are two buttons: "About" and "Help". Below these, there are three input fields: "Name:" with the value "A", "Dependencies:" with the value "B,C", and "Duration:" with the value "2.45". Below the input fields, there are four buttons: "Add", "Compute", "Restart", and "Quit". The "Add" button is highlighted. To the right of the input fields and buttons, there is a large yellow rectangular area labeled "OUTPUT". At the bottom of the window, there is a gray rectangular area containing the text "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.

The screenshot shows a software window titled "Phase 2". The window has a menu bar with "About" and "Help" buttons. Below the menu bar, there are three input fields labeled "Name:", "Dependencies:", and "Duration:". Below these fields are four buttons: "Add", "Compute", "Restart", and "Quit". The "Compute" button is highlighted. To the right of the input fields and buttons is a large yellow rectangular area labeled "OUTPUT". At the bottom of the window, there is a gray rectangular area containing the text "Error, incomplete connection found in the network. Restarting...".

3. Network Cycle

- ❖ If the activities are linking to form a cycle, an error message is displayed, and the program will restart.

The screenshot shows a software window titled "Phase 2". The window is divided into several sections:

- Top Bar:** A yellow bar with the word "OUTPUT" in black text.
- Left Panel:**
 - Buttons: "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report".
 - Input fields: "Name:", "Dependencies:", and "Duration:".
 - Error Message: "Error: Network cyle has occured. Restarting..." (Note the typos in the original image).
- Right Panel:** A large empty white area for output.
- Bottom Bar:** Two buttons: "Display Critical Paths" and "Change Duration".

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.

The screenshot shows a software window titled "Phase 2". On the left is a control panel with the following elements:

- Buttons: "About", "Help", "Add", "Compute", "Restart", "Quit", and "Generate Report".
- Input fields: "Name:", "Dependencies:", and "Duration:".
- A status message: "Entered Activity does not exist!".

On the right is an "OUTPUT" section with a table:

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

At the bottom right are two buttons: "Display Critical Paths" and "Change Duration".

RESTARTING

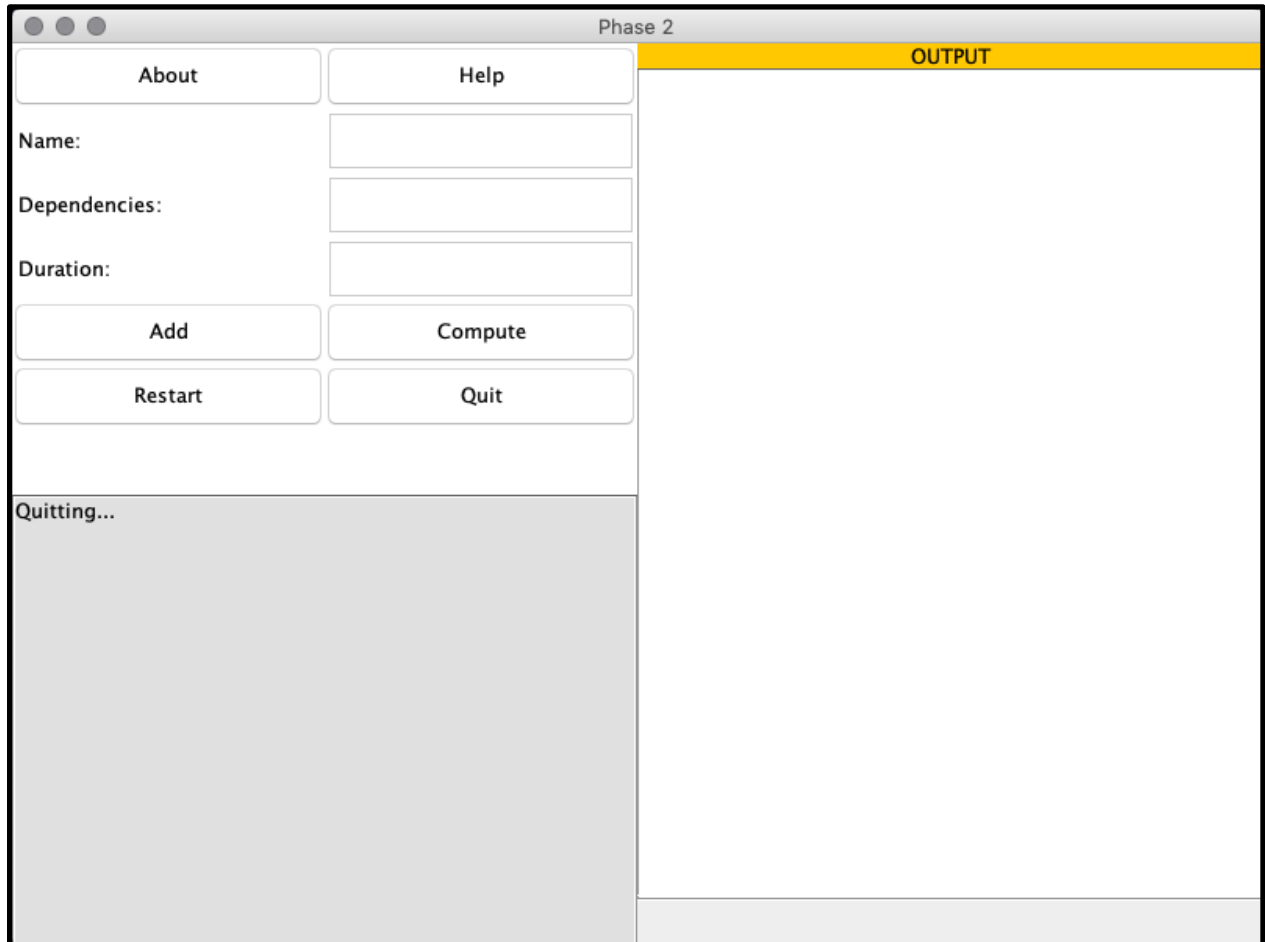
Restart Button being clicked

The screenshot shows a software window titled "Phase 2". The window has a menu bar with "About" and "Help" buttons. Below the menu bar, there are three input fields labeled "Name:", "Dependencies:", and "Duration:". Below these fields are four buttons: "Add", "Compute", "Restart", and "Quit". The "Restart" button is highlighted with a thick border, indicating it has been clicked. To the right of the input fields and buttons is a large area labeled "OUTPUT". Below the input fields and buttons, there is a text area that says "Restarted.".

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.