



# Word statistics

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OS2 PROJECT

# Project Description

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The purpose of this project is to develop a program with a graphical user interface (GUI) that reads all text files from a specified directory. The program should provide various word statistics, including the number of words per file and directory, occurrences of specific words ("is," "are," "you"), longest and shortest words per file and directory. The program should have the capability to search for text files in subdirectories as well.

# What We Have Actually Done

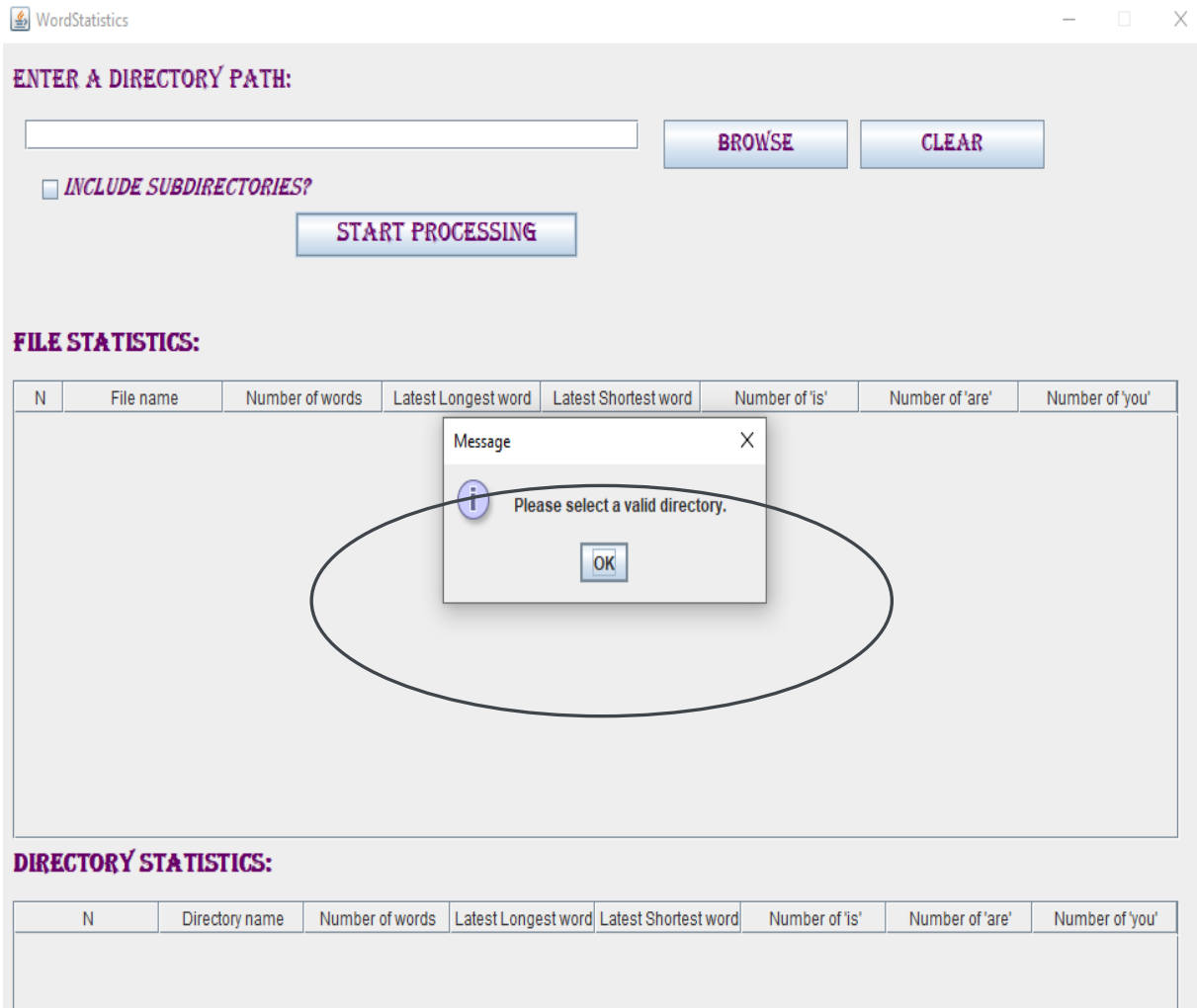
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- ✓ Developed a program with a GUI to read text files from a specified directory.
- ✓ Implemented functionality to search for text files in subdirectories.
- ✓ Calculated and displayed word statistics in real-time, including the number of words per file and directory, occurrences of specific words, and longest and shortest words per file and directory.
- ✓ We used Multithread to perform the operations on each file
- ✓ We use synchronization mechanisms to avoid race conditions and ensure the consistency of the data.

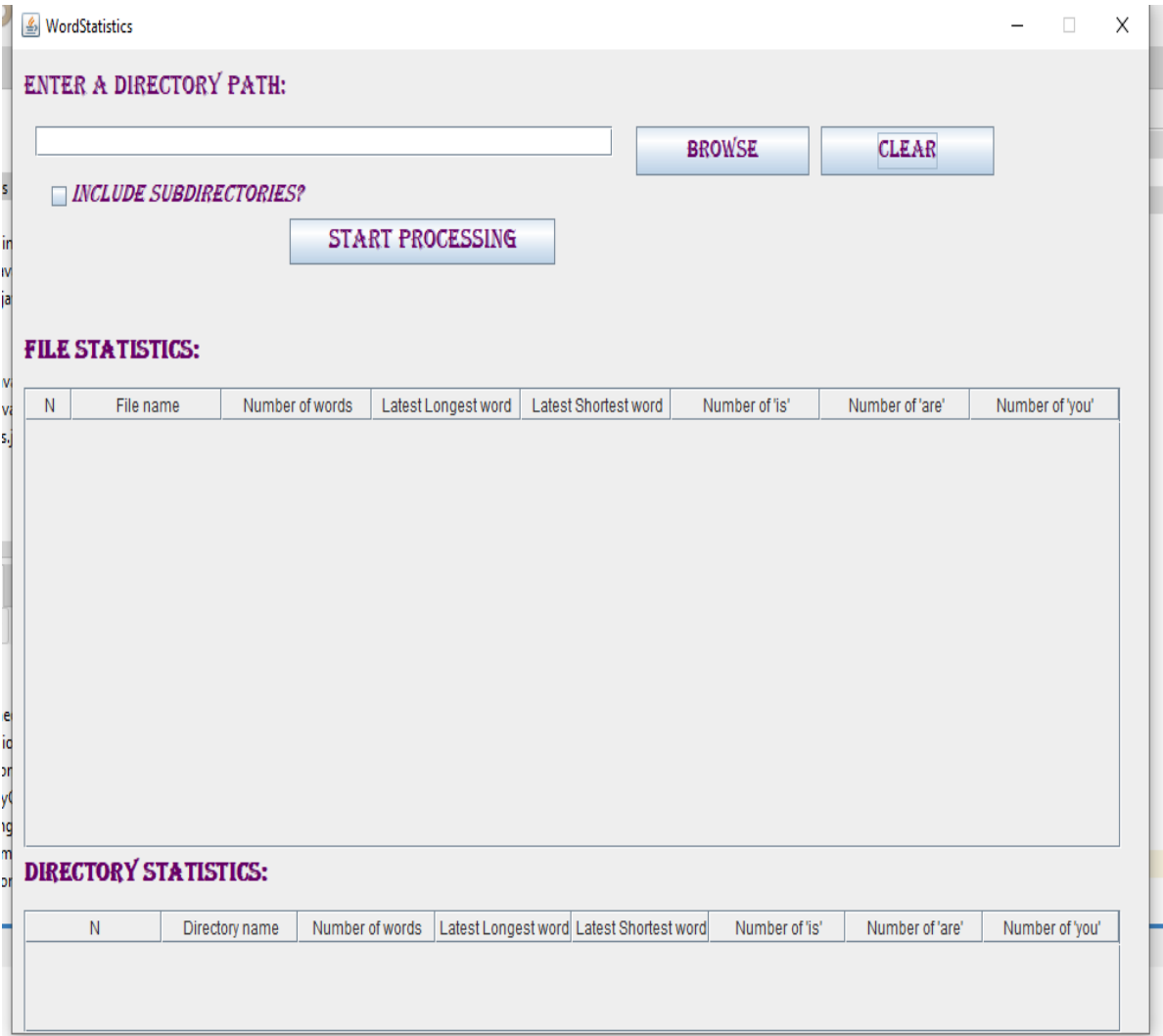
# Team Members' Roles

Nourhan Tarek Abdel Hady	202001010	Operations on files
Mahmoud Haney Saeed	202000861	Operations on files
Mahmoud Ali Eid Rajab	201900777	Threads
Muhammad Nasser Muhammad Mahmoud	201900739	Threads
Muhammad Anwar Ismail	202000738	GUI
Michael Anwar Hefzy Awad	202000712	GUI
Basant Atef Abdel Aziz	202000204	<u>Shared resources</u>

# Code Documentation



Invalid path



Main page

# Code Execution

Without including subdirectory

WordStatistics

ENTER A DIRECTORY PATH:

C:\Users\W\Documents\OS2

BROWSE

CLEAR

☐ INCLUDE SUBDIRECTORIES?

START PROCESSING

FILE STATISTICS:

N	File name	Number of words	Latest Longest word	Latest Shortest word	Number of 'is'	Number of 'are'	Number of 'you'
1	OS2/text (1).txt	11	nourhan	ok	3	1	3
2	OS2/text (2).txt	15	nourhan	i	1	1	4
3	OS2/text (3).txt	12	Mahmoud	is	3	3	3

DIRECTORY STATISTICS:

N	Directory name	Number of words	Latest Longest word	Latest Shortest word	Number of 'is'	Number of 'are'	Number of 'you'
1	OS2	38	Mahmoud	i	7	5	10

include subdirectory

WordStatistics

ENTER A DIRECTORY PATH:

C:\Users\W\Documents\OS2

BROWSE

CLEAR

☒ INCLUDE SUBDIRECTORIES?

START PROCESSING

FILE STATISTICS:

N	File name	Number of words	Latest Longest word	Latest Shortest word	Number of 'is'	Number of 'are'	Number of 'you'
1	OS2/text (1).txt	11	nourhan	ok	3	1	3
2	OS2/text (2).txt	15	nourhan	i	1	1	4
3	OS2/text (3).txt	12	Mahmoud	is	3	3	3
4	OS2/New folder\...	12	mahmoud	is	3	3	3
5	OS2/New folder\...	17	noha	is	4	4	4
6	OS2/New folder\...	17	Muhammad	i	4	2	3

DIRECTORY STATISTICS:

N	Directory name	Number of words	Latest Longest word	Latest Shortest word	Number of 'is'	Number of 'are'	Number of 'you'
1	OS2	84	Muhammad	i	18	14	20
2	OS2/New folder	46	Muhammad	i	11	9	10

#### 1. getInstance():

- **Description:** This static method implements the singleton pattern to ensure that only one instance of the ResultFrame class exists at any time.
- **Documentation:**
  - This method checks if the `uniqueInstance` variable is null.
  - If it is null, it synchronizes on the ResultFrame class to prevent race conditions.
  - Inside the synchronized block, it creates a new instance of ResultFrame and assigns it to the `uniqueInstance` variable.
  - Finally, it returns the `uniqueInstance`.

#### 2. initComponents():

- **Description:** This method initializes the graphical user interface (GUI) components of the ResultFrame class.
- **Documentation:**
  - This method sets the layout of the frame and initializes various UI elements like tables, labels, buttons, and text fields.
  - It also sets the properties of these elements, such as font, color, and text.

#### 3. DirectoryTablePropertyChange(evt):

- **Description:** This method is called whenever a property of the DirectoryTable changes.
- **Documentation:**
  - This method sets the horizontal alignment of all cells in the DirectoryTable to center.

#### 4. FileTablePropertyChange(evt):

- **Description:** This method is called whenever a property of the FileTable changes.
- **Documentation:**
  - Similar to `DirectoryTablePropertyChange`, this method sets the horizontal alignment of all cells in the FileTable to center.

#### 5. DirectoryChooserActionPerformed(evt):

- **Description:** This method is called when the "Browse" button is clicked.
- **Documentation:**
  - This method opens a file selection dialog using JFileChooser.
  - It allows the user to select a directory.
  - If a valid directory is selected, it sets the text of the DirPath text field to the selected directory path.
  - Otherwise, it displays an error message.



#### 6. ShowBtnActionPerformed(evt):

- **Description:** This method is called when the "Start processing" button is clicked.
- **Documentation:**
  - This method retrieves the path entered in the DirPath text field.
  - It validates the path using the `Path.isValid` method.
  - If the path is valid, it:
    - Disables the "Start processing" button.
    - Checks if the path is empty.
    - If the path is not empty, it adds it to the DirectoryContainer class.
    - If the subdirectories checkbox is selected, it starts a thread to discover subdirectories in the selected directory.
    - It starts a thread to discover files in the selected directory.
    - It starts another thread to consume the files and update the tables.
  - Otherwise, it displays an error message.

#### 7. SubDirsCheckBoxActionPerformed(evt):

- **Description:** This method is called when the "Include subdirectories?" checkbox is clicked.
- **Documentation:**
  - This method currently has no implementation.

#### 8. DirPathActionPerformed(evt):

- **Description:** This method is called when the text in the DirPath text field is changed.
- **Documentation:**
  - This method currently has no implementation.

#### 9. DirectoryChooserActionPerformed(evt):

- **Description:** This method is called when the "Clear" button is clicked.
- **Documentation:**
  - This method creates a new Runnable object and runs it on the EventQueue.
  - The Runnable object:
    - Sets the `uniqueInstance` variable to null.



#### 1. add(String filePath):

- **Description:** Adds a new file path to the internal data structures and updates the FileTable in the GUI.
- **Documentation:**
  - Generates a unique key for the file path.
  - Initializes a new data structure (ArrayList) to hold file statistics.
  - Sets the row number for the file in the table.
  - Stores the data structure in a map using the unique key.
  - Adds a new row to the FileTable with basic information about the file.

#### 2. incrementCounter(String filePath, int numOfCol):

- **Description:** Increments a specific statistic counter (e.g., number of words) for a file and updates the corresponding cell in the FileTable.
- **Documentation:**
  - Retrieves the file's data structure using the unique key.
  - Increments the specified counter in the data structure.
  - Updates the corresponding cell in the FileTable with the new value.

#### 3. storeLongestWord(String filePath, String word):

- **Description:** Stores the longest word found in a file and updates the corresponding cell in the FileTable.
- **Documentation:**
  - Retrieves the file's data structure using the unique key.
  - Updates the "longest word" field in the data structure with the new word.
  - Updates the corresponding cell in the FileTable with the new word.

#### 4. storeShortestWord(String filePath, String word):

- **Description:** Stores the shortest word found in a file and updates the corresponding cell in the FileTable.
- **Documentation:**
  - Similar to `storeLongestWord`, but updates the "shortest word" field and cell.