# Morph2Excel - User Manual

## Version 2024.1 - First Release

**Author: Till Preidt ~ [GitHub/MrNemesis98](GitHub/MrNemesis98)**

This is the official handbook for **version 2024.1** of **Morph2Excel**.

Accordingly it provides an introduction to the first released version of this software.

Description:

**Morph2Excel (M2E)** is a console-based application, able to execute multiple operations on the so-called wikimorph database. Wikimorph is an A.I. generated JSON file that contains morphological and etymological information about several English terms. The M2E software is able to search for specific entries within this database and create an excel file as output that is formatted according to specific settings chosen within the program. Since this software was created for linguistic research in the field of anglistics, users can choose between several output formats and search restrictions. M2E was developed to cover a wide range of research goals and needs. In this manual, the different functions of M2E will be introduced.

A respective copyright © and license agreement as well as terms of financing of this project can be found at the end of this document.

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# 1. System Requirements and Installation

Morph2Excel is able to operate on Windows 10 and 11. Since it is a console-based program it may look slightly differently between these two operating systems. More details on that later. Due to the size of the wikimorph database the program needs a hard drive storage of at least 759 MB. Furthermore a stable internet connection is needed to download the database. Beyond that Morph2Excel has no further system requirements.

There are two ways to install the program:

**A. Direct download as github repository** (recommended only for developers)
   a. open your browser and navigate to the public github repository of M2E
   b. select the branch **Version-2024.1** if not already chosen.
   c. download the repository (button "Code<>/Local" via HTTPS or SSH)
   d. open the project in an IDE (Integrated Development Environment) that supports Python (I strongly recommend Pycharm from Jetbrains (Community or Professional Edition)
   e. Morph2Excel can now be started by executing the file **console.py**

**B. Download as .exe file**
   a. open your browser and navigate to the public github repository of M2E
   b. select the branch **Version-2024.1** if not already chosen.
   c. download the folder **M2E_Version_2024.1** directly from the repository
   d. you can place this folder in any directory on your PC[1]
   e. Morph2Excel can now be started by execution the file **Start_M2E.exe** from which you can of course create shortcuts on the desktop.

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[1] Generally you can choose any directory but the absolute path should not include a white space character. Otherwise there will be problems with opening this manual directly from inside the program. But M2E will handle this problem and give you advice on where to find the manual on your PC.

## 2. Download of the Wikimorph Database

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Since Morph2Excel operates on the wikimorph database, a complete installation of this database is required to unlock and use all functionalities of M2E. Of course the program offers the possibility to download it on the flow directly from the [Zenovo](#) webpage. During this procedure the newest wikimorph version will be installed automatically.

Please do <u>not</u> try to download the database manually or import a foreign version into the program structure! M2E will only accept a wikimorph version verified with an own installation signature! Accordingly please use one of the program internal download options.

**Although the program will work without the database, some functionalities will remain restricted until a respective installation could be verified.**

# 3. General Information

As every console-based program Morph2Excel does not support a graphical user interface with possibilities to "click on something". The user can control the program sequence via keyboard input only. Therefore there are situations given in which the program expects such input. Apart from these occasions any user input is blocked to ensure the stability of the program. Otherwise, every single key hit would be saved (e.g. when loading a menu) and only executed at the next opportunity (e.g. after loading a menu), which would lead to uncontrollable loading times, cascades and so on.

Normally the program should be executed in full screen mode and without an opportunity to minimize the console window or generally change its size. During several tests this was the case for an execution under Windows 10. Although an execution under Windows 11 showed the console in full screen mode as well, there were still options left to change its size.

**I do not recommend changing the size of the console window during the execution!**

Due to complicated text formatting techniques the full screen mode is essential for displaying the menus or any kind of textual output in a correct manner. If a text formatting error occurs it can only be solved by restarting the program. However, if you do not quit the program and search for terms or compare excel files etc. these errors will still have **no effect on the results** of your interactions and the respective output.

# 4. How to search for Terms

## I. Manual Term Search

After the main menu is loaded and a valid installation of the wikimorph database could be verified, you can search a term by typing it in and pressing enter. This procedure can be repeated until you end this program. You can only search for one term at a time. To restrict the search and filter your results, you can define **part-of-speech (pos) filters** by connecting them to the term via a colon. The general notation is **term:pos**.

**Examples:**

test                       → the term " test" will be searched without restrictions

cool:noun                  → the term "cool" will be searched as noun

cool:adjective             → the term "cool" will be searched as adjective

plant:verb:noun            → the term "plant" will be searched as verb and noun

plant:tree                 → invalid input, since "tree" is no valid pos filter!

You can choose between the six pos types **noun**, **verb**, **adjective**, **adverb**, **preposition** and **phrase**. These filters can be combined at will, but the order will be taken into account for generating the excel output! If you search for a term without restrictions (example 1) the program will count that as a search without restrictions and the term will be analyzed with every pos filter.

**Note:** The term you want to search <u>cannot</u> be connected with any alternative pos type (or any search term) other than the pos types given (see example 5)! Inputs containing numbers or special characters will not be accepted. There are only a few exceptions that can be used to enter several functionalities of Morph2Excel as described in the main menu of the program. To name one: The exclamation mark "!" is often used as an identifier to access further menus or search modes as described in the following sections.

## II. Automatic Scan Mode

By typing in **s!** instead of a term you can enter the automatic scan mode (ASM). In this mode, you are free to select an excel file from your directory to scan this file and extract all the entries from the first column. These entries will be searched in the database consecutively and the results will be structured according to current settings. In M2E, all modes are independent from one another. Therefore the ASM can be combined with manual searches or executed multiple times in a row. Even the settings can be changed between multiple executions of the ASM. But the results will be saved in one output file, so make sure to plan your searches beforehand! Since this program was intended to deal with research data, the first row in the scanned file will be ignored to exclude headlines from the search. Please make sure your term list starts in the second row of the first column!

## III. Outputs

The execution of M2E creates two general output files.

The output covering the search results is an excel file which will be named **M2E_Output (plus date and time of the execution)**. Its format and contents depend on the respective settings. This is the output for the user which will open automatically after the program terminates if at least one term was searched for (either manually or via ASM). It can be found in the program directory structure under **./output/excel_files**. If M2E was executed without searching a term, this excel file will not be generated. Empty excel files can occur if the ASM mode was entered but the process was canceled before saving the results. Such empty files or those no longer needed can of course be deleted.

The second output is a log file as txt which contains information about the search history and the general user interactions. This file is useful for development processes in case of exceptions and program crashes and can be ignored by normal users.

## IV. Comparison Mode

There is a third type of output files which are only generated if the user executes the comparison mode (CM). This mode can be entered by typing in **c!** instead of a term. The CM can be used to compare terms from two excel files. Therefore, the files will be scanned just like in ASM, so make sure the list of terms for comparison starts in the second row of the first column! By contrast to ASM the program will only compare the terms and not search them in the database (that is why CM is also available without a wikimorph installation). The resulting output is a special comparison excel file which lists all terms and declares if they are found in only one of the scanned files (keyword: **unique**) or in both (keyword: **common**). For every execution of the CM, a new comparison file with a respective number will be generated. So the comparison results are always separate files rather than combined into one file!

# 5. How to change Output Settings and More

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## I. Settings Mode

The settings menu allows the user to influence many aspects of the program, mostly regarding the output format of search results (not comparison results!). For every setting, a detailed description and the respective options are always given directly in the menu for an intuitive user experience. There is a small settings overview defined in the main menu to inform the user about current settings (i.e. before searching a term). For entering the settings menu, type in **set!** instead of a term. If you want to directly navigate to a specific setting type in **set + number of setting + !** (i.e. **set5!** for **alphabetical output**, according to the settings overview in the main menu). But in general the navigation within the settings menu is kept quick to avoid long loading times. Changes are saved on the flow, so an interruption of the program or a crash will not delete the new configurations.

## II. Database Version Control Center

A new addition to the settings menu is the database version control center, listed as the first settings option. In this sub-menu, the user can manage the currently installed version of the wikimorph database (change description, update, delete) or download a new version. M2E also provides a small database management directly after the start before loading the main menu. But this is only the case if no wikimorph installation was found after program start and this option only provides the function of downloading. Therefore the version control center in the settings menu extends this post-start download option and is furthermore always available, regardless if wikimorph is already installed or not. But of course a missing installation of wikimorph does not only restrict the search modes but also the options in this version control center, since a missing file cannot be deleted or renamed.

# 6. Project Framework and Financing

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The development of **Morph2Excel** was financed by the **German Research Foundation (Deutsche Forschungsgemeinschaft / DFG)**. It was created and tested as part of the **ERSaF (English Root Stress across Frameworks) project** at **Trier University**, Germany.

| Project Leadership | Prof. Dr. Sabine Arndt-Lappe |
|---|---|
| Software Development and Maintenance / Creation and Management of Test Series | Till Preidt |
| Assistance and Benchmarking | Sonja Böker<br>Jakob Engel<br>Anika Petri<br>Lilly-Kristin Plock<br>Carolin Sloykowski |

# 7. Copyright and License Agreements

## I. Morph2Excel Software License: MIT License

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# II. Wikimorph Database

**WikiMorph Version v1, published June 12, 2021**

Zenovo Server: https://zenodo.org/records/5172857

Download Link: https://zenodo.org/records/5172857/files/wiki_morph.json?download=1

Introduced in: Yarbro, J.T., Olney, A.M. (2021). WikiMorph: Learning to Decompose Words into Morphological Structures. In: Roll, I., McNamara, D., Sosnovsky, S., Luckin, R., Dimitrova, V. (eds) Artificial Intelligence in Education. AIED 2021. Lecture Notes in Computer Science(), vol 12749. Springer, Cham. https://doi.org/10.1007/978-3-030-78270-2_72

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# III. Morph2Excel Components License

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| Sound File | Purpose of use |
|---|---|
| computerbeep_73.mp3 | acoustic display of an expected user interaction |
| computerbeep_74.mp3 | acoustic user feedback (confirmation) |
| computerbeep_75.mp3 | acoustic user feedback (denial) / acoustic problem display |
| hailbeep4_clean.mp3 | acoustic notification of program start / main menu loading |

The icon used for the .exe file of this program was created by the author using [Paint 3D](Paint 3D) and is published as well as the program itself under MIT license as described in the previous section.