

# So you want to be a Wheatley Whisperer?

Or: A Guide to getting started with Wheatley for Ringing Room

## Introduction

**Wheatley** is a computer program or bot, which “fills in” for missing ringers in **Ringing Room**. It is intended to be “human friendly”, e.g. with its default settings, Wheatley will adjust its speed to that of the human ringers, and will “wait up” for slow ringers who have made a mistake. It is designed to be a 'ninja helper with no ego'.

While there is an intention of integrating Wheatley directly with the Ringing Room website, currently the only way to operate it is from your local computer using a command line interface. This guide is intended to act as an introduction on how to install and use Wheatley with your Ringing Room practice. The guide assumes use of Windows 10, but operation for Macs should be fairly similar.

Wheatley was programmed by Ben White-Horne, Matthew Johnson, and others. I am not one of the programmers, so all feature requests, bug reports, or praise and thanks for their efforts should go directly to them! See (<https://pypi.org/project/wheatley/>) for contact details and the latest version of Wheatley. Thanks to Ben and Matthew for Wheatley, and also Bryn and Leland for Ringing Room itself.

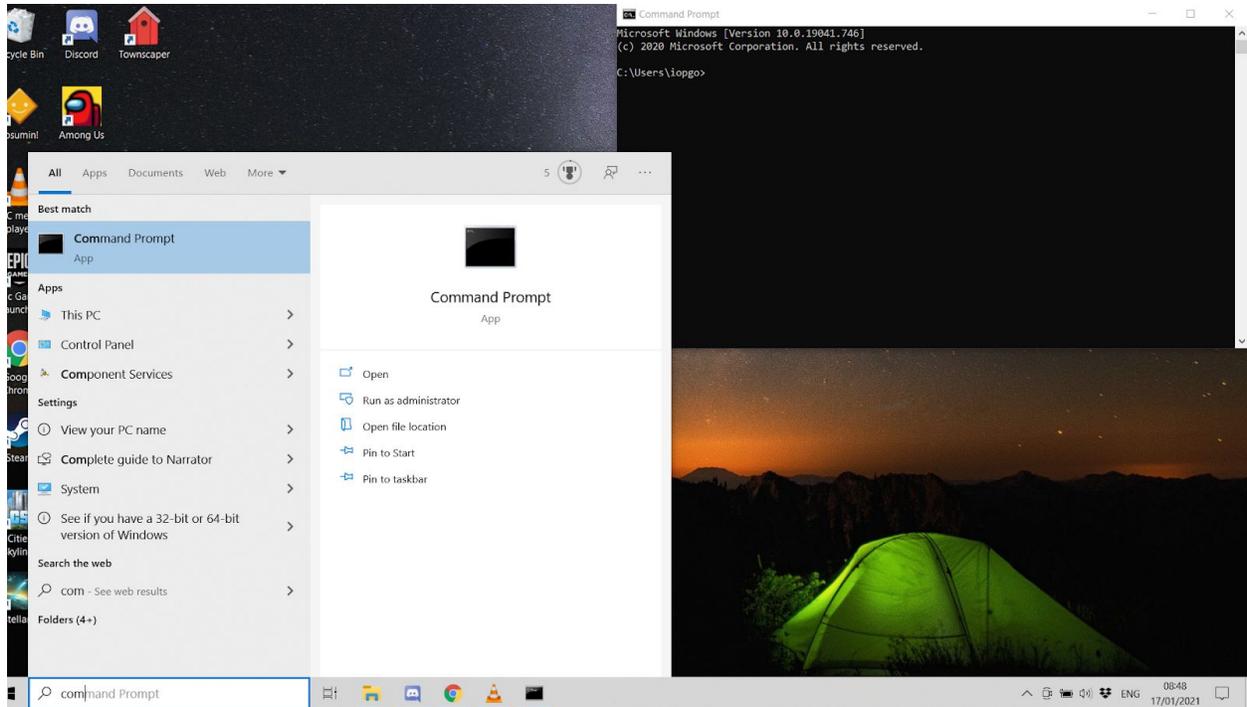
## Installing Wheatley

Wheatley needs to be run from a local PC which can access the internet and the Ringing Room website. It requires a (probably the most) recent version of Python (currently v3.9) to be installed, and then Wheatley can be installed and set up via the command line prompt “pip install wheatley”. More detailed installation instructions are in Appendix A, below.

## Getting Started (and Stopping) with Wheatley

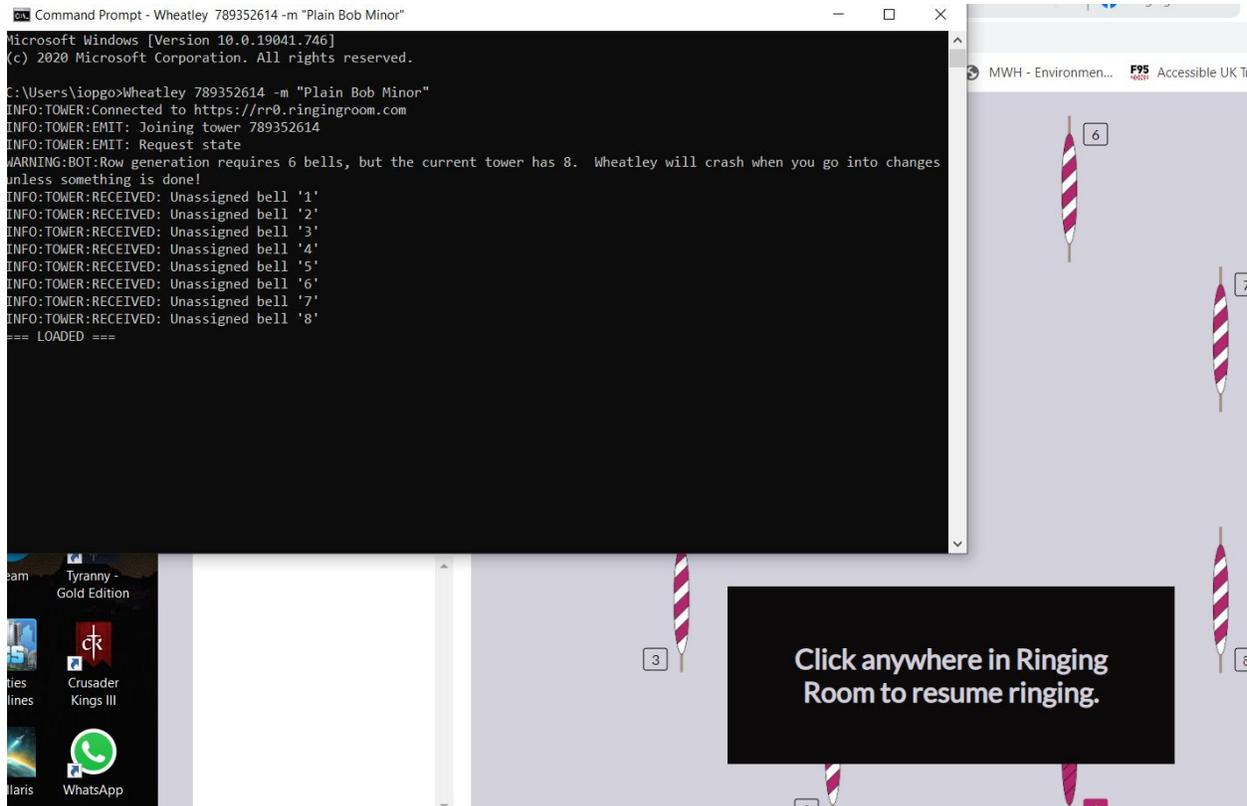
Wheatley is controlled by typing commands into the operating systems **Command Line**.

In Windows 10, a command prompt can be brought up by using the Windows search bar to search for “Command Prompt”. The result should look something like this:



Commands are given to Wheatley by typing in the command after the “>” prompt, and pressing the [Enter] key to confirm.

If all went well (See instructions for valid commands below), Wheatley will provide some feedback about the state of Ringing Room in the command prompt window:



You can assign as many (or as few) bells to non-Wheatley users as you like, and Wheatley will ring any unassigned bells.

Wheatley can then be told to start ringing, go in to changes, ring bobs, singles, to return to rounds and stand by use of the normal Ringing Room keyboard hotkeys from within the Ringing Room site:

- [l]ook to...
- [g]o next time
- [b]ob
- si [n]gle
- t [h]at's all
- s [t]and next

While ringing Wheatley will output the expected rows to the command window:

```
Command Prompt - Wheatley 789352614 -m "Plain Bob Minor"
INFO:ROWGEN:1 4 2 6 3 5
INFO:ROWGEN:4 1 6 2 5 3
INFO:ROWGEN:4 6 1 5 2 3
INFO:ROWGEN:6 4 5 1 3 2
INFO:ROWGEN:6 5 4 3 1 2
INFO:ROWGEN:5 6 3 4 2 1
INFO:ROWGEN:5 3 6 2 4 1
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INFO:ROWGEN:2 1 3 4 5 6
INFO:ROWGEN:1 2 4 3 6 5
INFO:ROWGEN:1 2 3 4 5 6
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INFO:ROWGEN:5 3 6 1 4 2
INFO:ROWGEN:3 5 1 6 2 4
INFO:ROWGEN:3 1 5 2 6 4
INFO:ROWGEN:1 3 2 5 4 6
INFO:ROWGEN:1 3 5 2 6 4
INFO:ROWGEN:3 1 2 5 4 6
INFO:ROWGEN:3 2 1 4 5 6
```

To stop Wheatley (so you can ring another method, for example) you need to return to the command prompt window and press [Ctrl] + [C]. This will cancel the execution of the program (with lots of irrelevant messages) and return you to the command prompt:

```
Command Prompt
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\main.py", line 392, in main
  console_main(unparsed_args, stop_on_join_tower)
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\main.py", line 375, in console_main
  bot.main_loop()
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\bot.py", line 304, in main_loop
  self.tick()
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\bot.py", line 233, in tick
  self._rhythm.wait_for_bell_time(time.time(), bell, self._row_number, self._place,
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\rhythm.py", line 123, in wait_for_bell_time
  self._inner_rhythm.wait_for_bell_time(current_time - self._delay, bell, row_number, place,
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\rhythm.py", line 299, in wait_for_bell_time
  self.sleep(bell_time - current_time)
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\wheatley\rhythm.py", line 81, in sleep
  time.sleep(seconds)
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\engineio\client.py", line 43, in signal_handler
  return original_signal_handler(sig, frame)
File "C:\Users\iopgo\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9_qbz5n2kfra8p0\LocalCache\local-packag
s\Python39\site-packages\socketio\client.py", line 27, in signal_handler
  return original_signal_handler(sig, frame)
KeyboardInterrupt
^C
C:\Users\iopgo>
```

While Wheatley will sometimes understand “thats all” and “stand” followed by “look to” and “go”, often it won’t, and will get confused: using [Ctrl] + [C] and re-entering the initial command (you should just be

able to press the up-arrow once to save having to re-type the command) will re-set Wheatley without confusion.

## Basic Wheatley Commands

A basic Wheatly command needs a minimum of three elements:

```
C:\Users\iopgo>wheatley 789352614 -m "Plain Bob Minor"  
INFO:TOWER:Connected to https://rr0.ringingroom.com  
INFO:TOWER:EMIT: Joining tower 789352614  
INFO:TOWER:EMIT: Request state  
INFO:TOWER:RECEIVED: Unassigned bell '1'
```

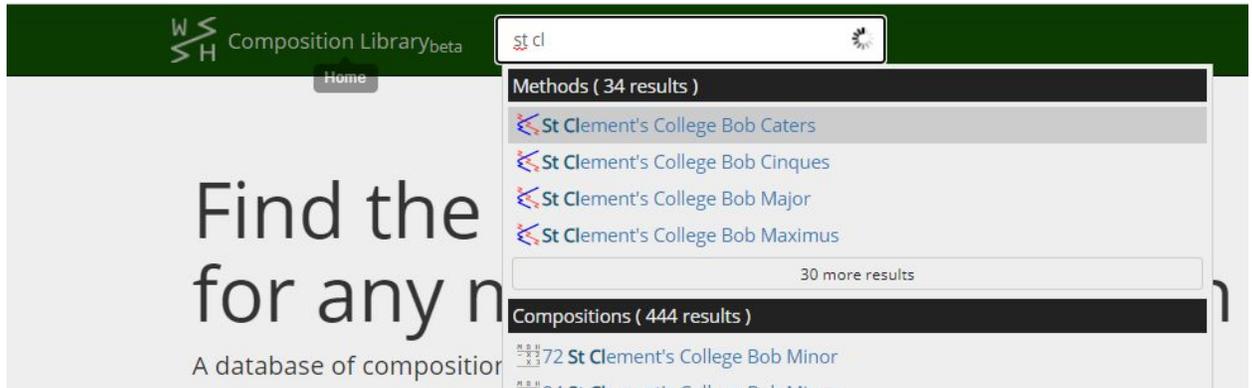
- *Wheatley* - This is just the command to the computer to run the Wheatley program
- *789352614* - This is the 9 digit ID of your particular ringing room. It should be in the top left hand corner of the Ringing Room screen, and you can copy it by clicking the little clipboard icon



to the right:

Either type this directly into the command prompt, or, if you have copied it to the clipboard, press [Ctrl] + [V] to paste it into the command prompt. (Most of the time in this guide I will write "[Room ID]": just replace everything including the square brackets with your own ringing room ID.)

- *-m "Plain Bob Minor"* - This is the command to tell Wheatley what to ring. The name of the method needs to be exactly what it is called on the Complib website (<https://complib.org/>), and include the name of the stage (minor, triples, etc.) A quick way to check you are spelling the method name correctly is to start typing the name in to the quick search bar at the in the title bar of Complib:



- There are also additional optional commands, detailed below.
- Press [Enter] to confirm the command.
- If everything worked correctly, Wheatley will feedback the state of the ringing room (number of bells, who is assigned to each bell, etc.):

```
C:\Users\iopgo>wheatley 789352614 -m "Plain Bob Minor"
INFO:TOWER:Connected to https://rr0.ringingroom.com
INFO:TOWER:EMIT: Joining tower 789352614
INFO:TOWER:EMIT: Request state
INFO:TOWER:RECEIVED: Unassigned bell '1'
INFO:TOWER:RECEIVED: Unassigned bell '2'
INFO:TOWER:RECEIVED: Unassigned bell '3'
```

- If you typed the ringing room ID in wrong you will get the error:

```
C:\Users\iopgo>wheatley 78935261 -m "Plain Bob Minor"
Bad value for 'room_id': Tower 78935261 not found at 'https://ringingroom.com'.
```

- If you typed an unrecognised method name you get the error:

```
C:\Users\iopgo>wheatley 789352614 -m "Plain Bob Mino"
Bad value for '--method': No method with title 'Plain Bob Mino' found.
```

- If you misspelled “Wheatley” you will get an error:

```
C:\Users\iopgo>wheatle 789352614 -m "Plain Bob Minor"
'wheatle' is not recognized as an internal or external command,
operable program or batch file.
```

- Most other errors from typing things in wrong will give the Wheatley command list:

```
C:\Users\iopgo>wheatley 789352614 -m "Plain Bob Minor" -p
usage: wheatley [-h] [--url URL] [--name NAME] (-c COMP | --comp-url COMP_URL | -m METHOD) [-b BOB] [-n SINGLE] [-u]
               [-s] [-H] [-k] [-w] [-I INERTIA] [-S PEAL_SPEED] [-G HANDSTROKE_GAP] [-X MAX_BELLS_IN_DATASET]
               [--version]
               room_id
wheatley: error: unrecognized arguments: -p
```

- Note that currently Wheatley, by default, uses bobs with a 14 place notation, and singles with a 1234 place notation (i.e. “plain bob bobs”), though it should also automatically deal with the usual bobs for common methods such as Grandsire and Stedman. For the slightly rarer cases (e.g. Erin, April Day), their calls can be specified using the advanced commands (see below) but this does require a little bit of understanding of place notation.

## Useful Advanced Wheatley Commands

Wheatley has several advanced, optional commands (also known as “switches”) which can be added to the basic command line.

The list below is based on the “Wheatley --help” command, but does not include everything available there.

- To join a server other than “ringingroom.com” (e.g. the north american server at na.ringingroom.com): Wheatley --url "https://na.ringingroom.com/" [Room ID] -m "Plain Bob Minor"
- To ring “handbell style”, i.e. to start “up down and in” (start changes immediately without any further commands after the first two rows of rounds) and to end immediately after a row of rounds at the end of the method: Wheatley [Room ID] -m “Plain Bob Minor” -H (that is a capital “H”)
- Use -u to start “up-down-and-in” without automatically stopping at rounds, or -s to automatically stop at rounds but start the method “tower bell style”.
- If you are ringing a method but want something other than “plain bob” style bobs (place notation: 14) and singles (p.n.: 1234) you can define what place notation is used instead when the “b” or “n” hotkeys are pressed in ringingroom using the -b and -n switches. A full explanation of the notation used is beyond this guide, but useful tips include:
  - Use double quotes (“) around the content of the command, and don’t include a space between the switch and the first quote mark (e.g. -b”-1:3.1” for a Grandsire Bob)
  - A row in the lead may be specified, followed by a colon (:), and then the place notation for each change after that row, separated by a full stop (.). A “cross” change on even bells can be represented with an “x”.
  - The call will take effect next time the ringing arrives at that row in the lead, overrides the palace notation of the method for as long as changes are specified, and then reverts back to the normal place notation of the method once these have run out.
- To ring a (published) composition from the Complib website (<https://complib.org/>): Wheatley [Room ID] -c [Complib ID]
  - Note in the case of using a complib composition you don't specify a method.
  - Also, ringing room won't call the bobs, singles or method changes in spliced compositions: you will have to remember and call them (without using the hotkeys, which would further confuse Wheatley) yourself!
- In order to make Wheatley ring more like Abel, i.e. to ignore striking and method errors and to keep ringing to the rhythm, add -k
- You can change how sensitive Wheatley is to the other ringers changes in rhythm with the -I switch. “-I 1” will make Wheatley ignore changes in rhythm: “-I 0” will make Wheatley very sensitive indeed. The default is in the middle somewhere.

- You can set how quickly Wheatley sets off (with default parameters this will be fairly quickly changed to match the other ringers with the peal speed switch (“-S”): this sets the 5040 row peal speed in minutes, so adding “-S 180” sets Wheatley to a 3 hour peal speed.

## Appendix A - Installing Wheatley

These instructions assume you are using a Windows 10 PC. Other operating systems will have different procedures, but should be similar in outline if not detail.

- Wheatley is a program, or “Script” written in the Python programming language, and currently requires Python to be installed on your computer to be able to run.
- Install Python by going to the Microsoft Store (usually via the Start menu), and search for "python"... the latest build from the Python Foundation is the one you want (Python 3.9 at the time of writing: this will be free). Install this. This method of installation should automatically add Python.exe and pip.exe to your C:\Users\[USER NAME]\AppData\Local\Microsoft\WindowsApps\ directory.
- If Python isn't available in the Microsoft Store, you may need to install it from <https://www.python.org/downloads/windows/>
- Go to the Windows search bar and type "cmd" to get the command prompt. From here, type "pip install wheatley". Hopefully, this will install the latest version of Wheatley, and won't give any fatal errors such as being unable to find pip or not being able to download/install any components. If you get the error message: “‘pip’ is not recognized as an internal or external command, operable program or batch file”, you will have to add the Python directory to your Windows PATH variable. (See below).
- If all went well, typing “Wheatley -h” at your command prompt will output the Wheatley help file, and you are ready to go!

```
C:\Users\iopgo>wheatly -h
'wheatly' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\iopgo>wheatly -h
usage: wheatly [-h] [--url URL] [--name NAME] (-c COMP | --comp-url COMP_URL | -m METHOD) [-b BOB] [-n SINGLE] [-u]
              [-s] [-H] [-k] [-w] [-I INERTIA] [-S PEAL_SPEED] [-G HANDSTROKE_GAP] [-X MAX_BELLS_IN_DATASET]
              [--version]
              room_id

A bot to fill in bells during ringingroom.com practices

optional arguments:
  -h, --help            show this help message and exit
  --version             show program's version number and exit

Tower arguments:
  room_id              The numerical ID of the tower to join, represented as a row on 9 bells, e.g. 763451928.
  --url URL            The URL of the server to join (defaults to 'https://ringingroom.com')
  --name NAME          If set, then the bot will ring bells assigned to the given name. When not set, the bot rings
                      unassigned bells
```

- If you get an error message such as: “‘wheatly’ is not recognized as an internal or external command, operable program or batch file”, you may need to add the Python Script directory to your PATH manually.

## Adding directories to the PATH variable

- To add either the Python directory or the Scripts directory (the location of where the Wheatley.exe file is installed by pip), follow the instructions for “Method 2” here: <https://datatofish.com/add-python-to-windows-path/>
- Unfortunately, minor variations of how Windows or how the Python installation is set up can lead to widely varying locations of where the Python and the Scripts directory are located, so it is difficult to give detailed instructions. In my case, the Python was already added to:
  - C:\Users\[USER NAME]\AppData\Local\Microsoft\WindowsApps\  
(so I didnt need to add this to the PATH variable as this is already included by default in my Windows setup)And the Script directory is:
  - C:\Users\[USER NAME]\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.9\_qbz5n2kfra8p0\LocalCache\local-packages\Python39\Scripts\  
(which did have to be added)So try looking in similar places first.
- If you prefer not to mess around with the PATH, you may find that replacing “Wheatley” with “python -m Wheatley” in all of the above commands works.