

Bell View and Change Ringing Engine

Installation Guide



Jonathan Wilson

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1 Introduction

What is Bell View?

Bell View is an interactive method explorer for church bell ringers. Its features include

- Library of over 250 methods, including all those in the current edition of Diagrams
- Methods displayed using traditional blue (or other colour) lines
- Simple touches with bobs and singles displayed row by row
- Methods can be exported to HTML for viewing or printing by a web browser
Availability of other export formats: plain text, comma separated value, postscript, PDF and PNG
- Methods can be rung audibly using bell sound samples
- A powerful underlying API, Change Ringing Engine, which works out the rows. It can be used interactively to unleash more advanced features.¹

Bell View and Change Ringing Engine are written in Python and will work on almost any computer that can run Python, including Microsoft Windows PC's, Apple Mac's, the Raspberry Pi and computers which run Linux and other Unix-like operating systems.²

Obtaining Bell View

Bell View and the Change Ringing Engine are distributed via the Python Package Index (PyPI), The download and installation process is entirely managed by the Python package installer (PIP³).

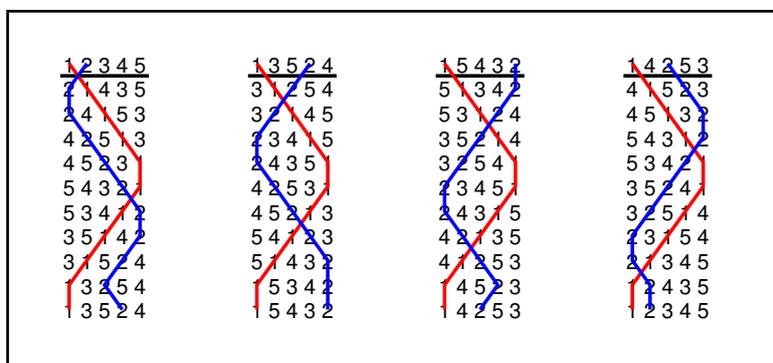


Figure 1: Plain Course of Plain Bob Doubles created by Bell View

Python

It will be necessary to install Python before attempting to install the applications. Unless Python is already installed, it is recommended to download and install the official Python release from www.python.org⁴

2 or 3?

At present, two versions of Python are available; Python 3 is the currently developed and maintained release; whereas Python 2 is the unmaintained legacy release. It is strongly recommended that Python 3 is used because Python 2 is being phased out.

Sound support

There is no standard audio support for Python. Sound is supported by various third party system dependent modules, which also may be installed by PIP.

Windows uses *playsound*,⁵ Mac OS X uses *nssound*. PyGame works on the Raspberry Pi and may work on other UNIX or Linux systems.

Printing support

Neither Bell View or Change Ringing Engine allows output to be sent directly to a printer; however the output may be saved as an HTML file and then printed out using a web browser.

It is also possible to output to other file formats such as Postscript, PNG and PDF. In order to generate PNG or PDF, it is necessary to install Ghostscript which is available from www.ghostscript.com.

Manuals

Manuals for both Bell View and Change Ringing Engine are available from the Harrogate Bell Ringers website www.harrogatebellringers.org/bellview.

2 Installing on Windows PCs

Installing Python

Windows does not come with Python preinstalled, so it is necessary to download and install the latest Python (version 3) distribution from www.python.org. When the self-extracting installer file has been downloaded it may be found in the Downloads folder and it should be opened to start it.

It is necessary to select the options *Install Launcher for all users* and *Add Python to PATH*, otherwise there will be problems in installing the applications.

Now click on *Install Now* to complete the installation. It will prompt for the username and password of the Administrator as it requires administrator privileges to install it. When the installation is complete, Python will appear as an item in the start menu.

Installing the applications

The next part of the installation must be done by each user wishing to run Bell View and/or Change Ringing Engine. It does not require administrator privileges.

The command prompt is used for this part. It may be found in the *Windows System* folder of the Start Menu. When open it displays a prompt similar to the following:

```
C:\Users\fred>
```

Commands are run by typing in a line and pressing Enter; for example to check Python has been installed correctly the command `python --version` may be run.

```
C:\Users\fred> python --version  
Python 3.8.2
```

The Sound module now needs to be installed by running the following command from the Command Prompt; it uses PIP to download and install a package from PyPI.

```
pip install --user playsound
```

Now the Bell View and Change Ringing Engine applications may be installed; again, these are hosted on PyPI and are managed by PIP.

```
pip install --user crengine bellview
```

Finally icons may be placed on the desktop by running the following two commands

```
python -m crengine -z  
python -m bellview -z
```

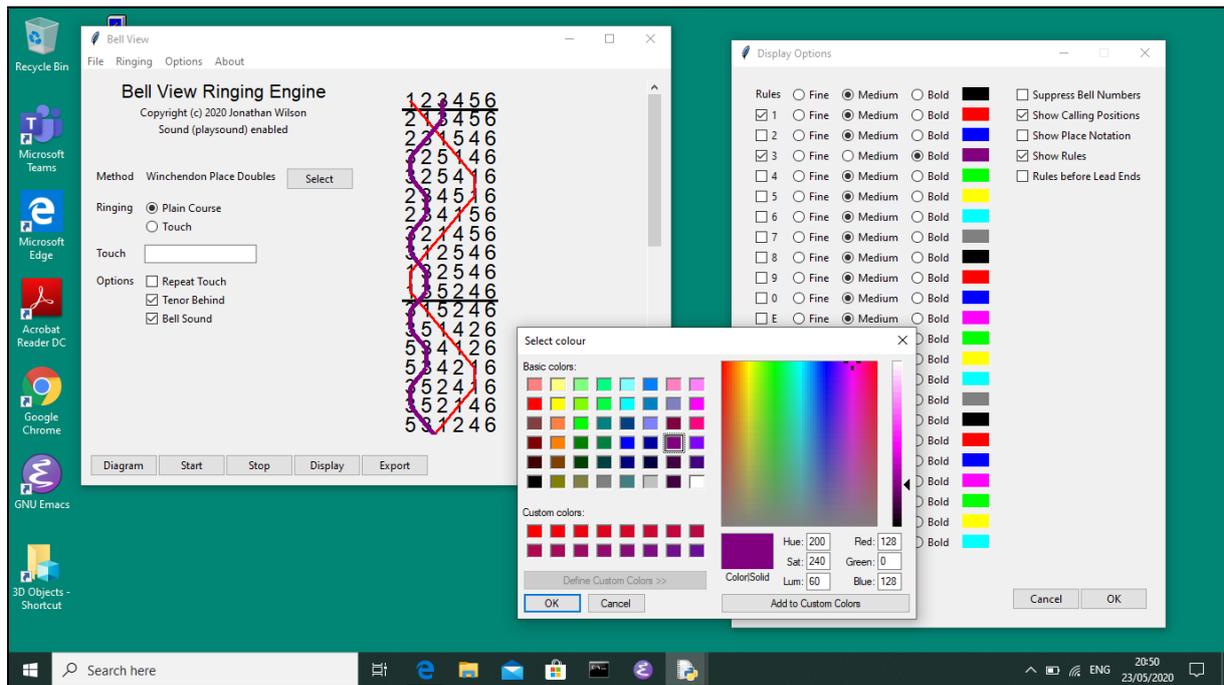


Figure 2: Bell View running on Windows 10

Starting the applications

Bell View and Change Ringing Engine are started by double-clicking the appropriate desktop icon. Alternatively it is possible to start the applications using the following commands from the Command Prompt:

```
python -m bellview      Bell View
python -m crengine     Change Ringing Engine
```

Upgrading the applications

To upgrade the applications, start the command prompt and run the following command:

```
pip install --upgrade --user crengine bellview
```

Before running Bell View or Change Ringing Engine following an upgrade, the existing CRE folder should be moved (or renamed). This will allow a fresh working folder to be created with the resources that the upgraded version requires. It may be found in the user profile; for example `C:\Users\fred`. Any user created files then may be copied back from the old folder to the new folder.

Uninstalling the applications

To uninstall the applications, start the command prompt and run the following command:

```
pip uninstall crengine bellview
```

3 Installing on Apple Mac (Recommended)

Installing Python

It is strongly recommended that Bell View and Change Ringing Engine are run with the latest Python 3 (Mac OS X comes with Python 2.7 only which is now deprecated).

The latest Python 3 distribution should be downloaded from www.python.org. The installer package in the Downloads folder should then be open to start the installation. It will ask for the administrator user name and password as it requires administrator privileges to install it.

When the installation is complete, there will be a *Python* subfolder in the *Applications* folder.

Installing the applications

The next part of the installation must be done by each user wishing to run Bell View and/or Change Ringing Engine. It does not require administrator privileges.

The Terminal is used for this part. It may be found in the *Utilities* subfolder of the *Applications* folder. When open it displays a prompt similar to the following:

```
fred$
```

Commands are run by typing in a line and pressing Enter; for example to check Python has been installed correctly the command `python --version` may be run.

```
fred$ python3 --version  
Python 3.8.2
```

N.B. The Python and PIP commands for Python 3 are `python3` and `pip3`; and not `python` and `pip`. The latter will run the system supplied Python 2.

Sound is provided by `nssound` which uses the native Cocoa API's of Mac OS X. It is part of the `pyobjc` package. It is installed by running the following from Terminal; it uses PIP to download and install the package from PyPI.

```
pip3 install --user pyobjc
```

Now the Bell View and Change Ringing Engine applications may be installed; again, these are hosted on PyPI and are managed by PIP.

```
pip3 install --user crengine bellview
```

Finally icons may be placed on the desktop by running the following two commands

```
python3 -m crengine -z  
python3 -m bellview -z
```

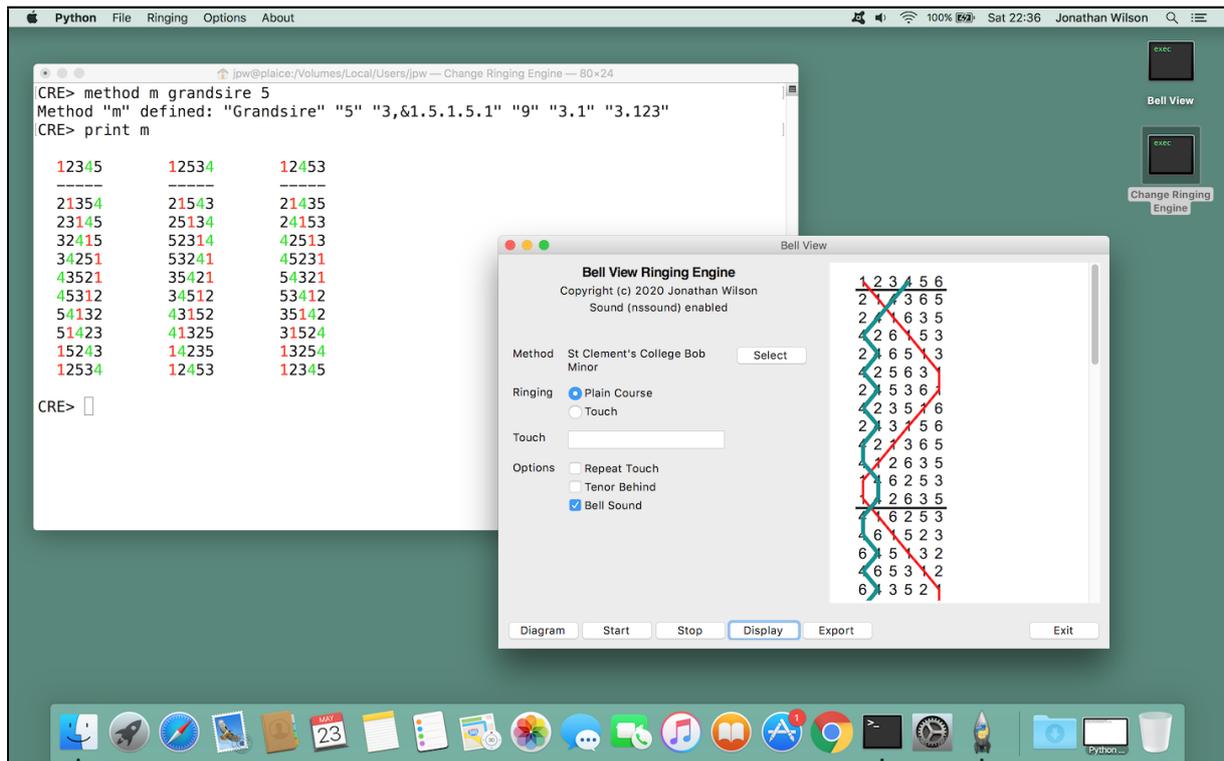


Figure 3: Bell View and Change Ringing Engine running on Mac OS X

Starting the applications

Bell View and Change Ringing Engine are started by double-clicking the appropriate desktop icon. Alternatively it is possible to start the applications using the following commands from Terminal:

```
python3 -m bellview      Bell View
python3 -m crengine      Change Ringing Engine
```

Upgrading the applications

To upgrade the applications, start the command prompt and run the following command:

```
pip3 install --upgrade --user crengine bellview
```

Before running Bell View or Change Ringing Engine following an upgrade, the existing CRE folder should be moved (or renamed). This will allow a fresh working folder to be created with the resources that the upgraded version requires. It may be found in the user's home folder; for example `/Users/fred`. Any user created files then may be copied back from the old folder to the new folder.

Uninstalling the applications

To uninstall the applications, start the command prompt and run the following command:

```
pip3 uninstall crengine bellview
```

4 Installing on Apple Mac (Alternative)

The pre-installed Python release

It is also possible to run Bell View and Change Ringing Engine using the native version 2.7 release of Python that comes preinstalled as part of Mac OS X; however this is now deprecated as Python 2 is coming to the end of its life and future versions of Change Ringing Engine and Bell View are not guaranteed to be supported on Python 2.

This release of Python 2.7 already has the `nssound` sound module installed with it. However this release does not come with the PIP package installer⁶ that is needed to install Bell View and the Change Ringing Engine, so PIP will need to be installed before the applications can be installed.

Installing the applications

This process needs to be carried out by every user wishing to use the applications. It does not need to be carried out with administrator privileges. The entire process is carried out from Terminal (in Utilities subfolder of the Applications folder).

Firstly, PIP should be installed by running the following commands:

```
curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py
python get-pip.py
```

Now the Bell View and Change Ringing Engine applications may be installed; these are hosted on PyPI and are managed by PIP.⁷

```
python -m pip install --user crengine bellview
```

Finally icons may be placed on the desktop by running the following two commands

```
python -m crengine -z
python -m bellview -z
```

Starting the applications

Bell View and Change Ringing Engine are started by double-clicking the appropriate desktop icon. Alternatively it is possible to start the applications using the following commands from the Terminal:

```
python -m bellview      Bell View
python -m crengine      Change Ringing Engine
```

Upgrading the applications

To upgrade the applications, start the command prompt and run the following command:

```
python -m pip install --upgrade --user crengine bellview
```

Before running Bell View or Change Ringing Engine following an upgrade, the existing CRE folder should be moved (or renamed). This will allow a fresh working folder to be created with the resources that the upgraded version requires. It may be found in the user's home folder; for example `/Users/fred`. Any user created files then may be copied back from the old folder to the new folder.

Uninstalling the applications

To uninstall the applications, start the command prompt and run the following command:

```
python -m pip uninstall crengine bellview
```

5 Installing on Linux and other UNIX systems

Python on UNIX and Linux

Many modern Linux and UNIX-like systems already come with Python or at least make it an installable option for the operating system. The first task is to check whether or not Python is already installed by trying the `python` and `python3` commands from Terminal⁸

```
fred$ python -m --version
Python 2.7.10
fred$ python3 -m --version
Python 3.8.2
```

On this particular system (a Raspberry Pi), both Python 2 and Python 3 are installed, with `python` running Python 2 and `python3` running Python 3; however it is possible on some systems that the `python` command may also run Python 3.

If Python is not installed, then the operating system's package manager⁹ should be used to install it. Due to the plethora of package managers on different systems, this process is not described here. The reader is referred to the operating system's documentation.

It is strongly recommended to install Python version 3 as this is future-proof. Installation of Python will almost certainly require root (administrator) privileges and once the installation is complete, then Python should be tested with the above commands.

Installing the applications

The next part of the installation must be done by each user wishing to run Bell View and/or Change Ringing Engine. It does not require root (administrator) privileges. It is carried out from the Terminal.

N.B. It is assumed that Python version 3 is being used and the Python and PIP commands are `python3` and `pip3`.¹⁰

Firstly, the sound module is installed from PyPI using PIP to download and install the package. The PyGame package is recommended; it works on the Raspberry Pi¹¹ and may work on other systems too.

```
pip3 install --user pygame
```

Now the Bell View and Change Ringing Engine applications may be installed; again, these are hosted on PyPI and are managed by PIP.

```
pip3 install --user crengine bellview
```

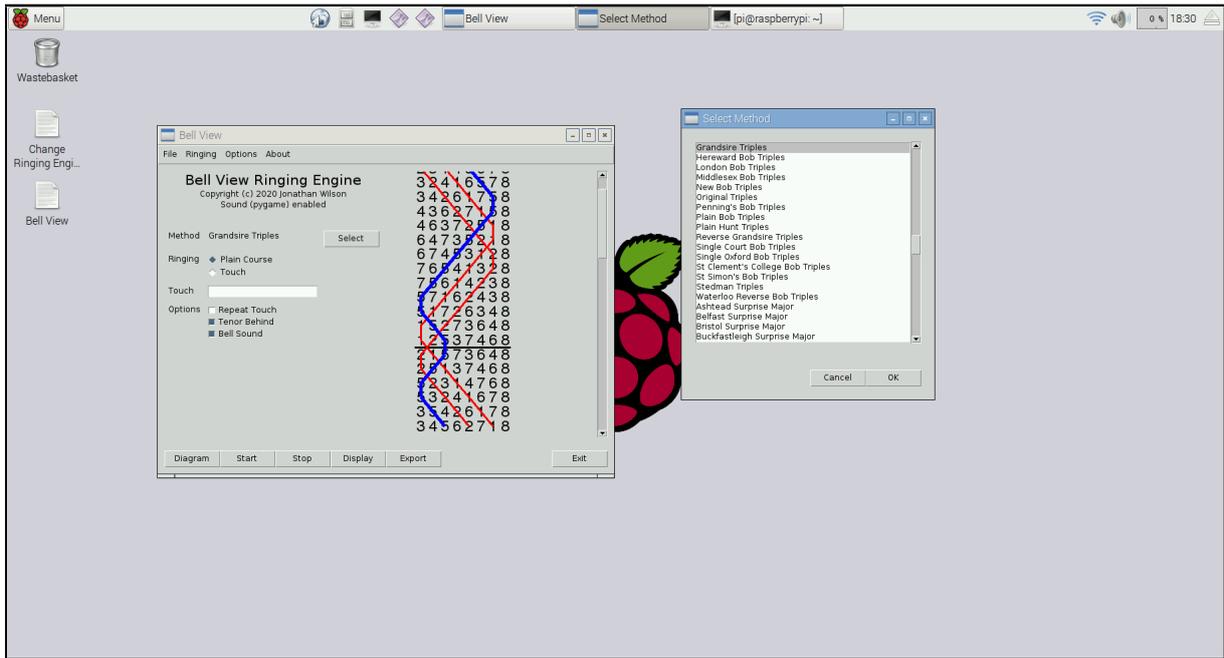


Figure 4: Bell View running on a Raspberry Pi

On systems that have a fully fledged desktop environment, icons may be placed on the desktop by running the following two commands

```
python3 -m crengine -z
python3 -m bellview -z
```

Starting the applications

On all systems the applications may be started by running either of the following commands from Terminal:

```
python3 -m bellview      Bell View
python3 -m crengine      Change Ringing Engine
```

On some systems (but not all), it may be possible to start the applications from icons on the desktop in the same way as Windows or Mac OS X.

Upgrading the applications

To upgrade the applications, start the command prompt and run the following command:

```
pip3 install --upgrade --user crengine bellview
```

Before running Bell View or Change Ringing Engine following an upgrade, the existing CRE folder should be moved (or renamed). This will allow a fresh working folder to be created with the resources that the upgraded version requires. It may be found in the user's home directory; for example `/home/fred`. Any user created files then may be copied back from the old folder to the new folder.

Uninstalling the applications

To uninstall the applications, start the command prompt and run the following command:

```
pip3 uninstall crengine bellview
```

A Bell View and Change Ringing Engine Licence

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Notes

¹For further information, please refer to the Change Ringing Engine manual

²Mobile phones and tablet devices are not supported.

³PIP stands for Python Install Package

⁴Also known as C-Python

⁵Python on Windows also comes with *winsound*; however this does not work as well as *playsound*

⁶Apple does not support third party packages running on Python, but that does not imply that it isn't possible

⁷Even when PIP is installed, the `pip` command does not appear to work; however the bootstrap `python -m pip` certainly does

⁸Terminal may be called Command Prompt, Shell or XTerm. Commands are run by typing in a line, followed by *Enter*.

⁹For example; `apt-get` on Debian Linux

¹⁰If the command to run Python is `python`, or you really must run version 2 Python, then replace `python3` and `pip3` with `python` and `pip` in all the commands following in this section

¹¹The default Raspberry Pi operating system already has PyGame installed