

How to get QACD-quack running on Linux, MacOS and Windows

Ian Thomas, 20th June 2018

Whereas the previous version of QACD-quack from November 2017 required very specific versions of python (2.7) and the pyqt library (4.11), the current version uses the latest python and libraries. These are most easily obtained using the conda python distribution (<https://conda.io/docs>). Using conda to install python has the following advantages:

- It automatically downloads and installs all other packages required by the ones you request.
- It works the same on Linux, MacOS and Windows.
- It allows multiple different python installations to exist side-by-side on the same computer, and these can be easily switched between.

This document describes how to install conda, and how to obtain and run QACD-quack.

Text in a fixed-width font with a yellow background, `like this`, refers to text that should be typed in at a command line.

Installing conda python

If you already have conda python installed (either Anaconda or Miniconda), proceed directly to the next section (Installing the conda environment for QACD-quack).

Otherwise, you need to install conda. There are two different versions of conda, known as Anaconda and Miniconda. Anaconda includes a fully working python environment with all of the commonly used python packages, whereas Miniconda is a stripped-down version containing just a few packages and is more suited for users who want multiple python environments. Miniconda is more appropriate here as particular versions of python and the pyqt packages are required.

The Miniconda installer is available from <https://conda.io/miniconda.html> for Windows, MacOS and Linux. Download the latest 64-bit installer, which is currently for python 3.6.

The MacOS and Linux installers are bash shell scripts that should be run from the command line (i.e. in a terminal).

1. Run the installer (using the correct installer name):

```
bash ./Miniconda-installer.sh
```

2. Agree to the licence terms.
3. Install to a directory of your choice.
4. Select yes to add to PATH.
5. Close the terminal.

The Windows installer is an exe file that can be double-clicked to install.

1. Run installer file.

2. Agree to licence terms.
3. Install for Just Me.
4. Install to a directory of your choice. Note that on School managed PCs, you should install to the D: drive rather than the C: drive, e.g. [D:\Miniconda3](#)
5. Unselect both Advanced Options (add to PATH and register as default python).
6. Unselect both Learn more options.

Installing the conda environment for QACD-quack

If you already have a conda environment for python 3 that contains recent versions of matplotlib, numpy, pyqt, etc, you can use it to run QACD-quack. If you do not, or if you do but you wish to have a separate environment for QACD-quack to not interfere with other python programs on your computer, you should create a new conda environment for it. Here the name 'quack3' is used for the environment, which is shorthand for quack using python 3.

1. Creating a new conda environment is performed from the command line:
On Windows, open the 'Anaconda3 Prompt' from start menu under Anaconda3 (64-bit).
On MacOS and Linux, open a terminal.
2. Type (all on one line)
`conda create --name quack3 python=3 matplotlib numba pytables
pytest scikit-learn`
This creates a new conda environment called quack3 that will be used to run QACD-quack. It may take a number of minutes to download and install all of the required python packages.
3. On Windows, type
`activate quack3`
On MacOS and Linux, type
`source activate quack3`
This activate the quack3 conda environment. Note that the command-line prompt now indicates in brackets the name of the conda environment.

Obtaining the QACD-quack source code

1. Open a web browser at the following URI: <https://github.com/ianthomas23/QACD-quack>
2. Find the green button containing the text 'Clone or download'. To the far left of this there is a button containing the text 'Branch: master'. If it is something other than 'master', then click on the button to open a drop-down box and select master.
3. Note that below the 'Clone or download' button there is some text like 'Latest commit 407d1af Nov 16, 2017'. This indicates when the code was last changed, and a unique identifier for that change.
4. Click on 'Clone or download', followed by 'Download ZIP'.

5. Save the zip file which will be called QACD-quack-master.zip
6. Unzip the zip file wherever you wish. Make a note of this directory as you will need it to run QACD-quack.

Running QACD-quack

This is performed from the command line.

1. On Windows, open the 'Anaconda3 Prompt'.
On MacOS and Linux, open a terminal.
2. On Windows, type
`activate quack3`
On MacOS and Linux, type
`source activate quack3`
to activate the quack conda environment.
3. Change directory to where QACD-quack is installed, using the cd command.
On Windows, you may need to change drive from e.g. C: to D: first, e.g.
`d:`
`cd whatever-directory`
4. Run QACD-quack using
`python quack.py`
5. A tutorial is included within the QACD-quack download in the file 'docs/Tutorial.pdf'. The original user manual can also be found in the file 'old/QACD User Manual.pdf'.
6. For test data use 'Zoned Grain.zip' obtained from Ian Thomas. *****

Old version of QACD-quack

The old version of QACD-quack (as of November 2017) is included in the download in the directory 'old'. To run this using a conda environment called 'quack':

1. `cd old`
2. `source activate quack`
3. `python Main.py`

Creating the 'quack' conda environment was described in the Quick Start Guide of November 2017. The key information is the line that creates the conda environment and specifies the required libraries and specific version numbers. It is (all in one line):

1. `conda create --name quack python=2.7 pyqt=4.11 matplotlib h5py pytables psutil pandas dask scipy scikit-learn PIL`