



INSTALLATION:

1. Download Python v3.7 and install the following packages
 - a. Dicompylecore (requires: pydicom and six. See: <https://github.com/dicompyle/dicompyle-core> for more info)
 - b. Numpy
 - c. Matplotlib
 - d. Mpldatacursor
 - e. Tkinter
2. Go to <https://github.com/RhondasRED/RED> and download the RED-master.zip folder
3. Extract the files
4. Run the RED.py program, for ease of use save on the desktop as .exe file

USING RED:

1. Run RED.py
 - i) If the file is saved as .exe, a double click will run it (recommended)
 - ii) Otherwise:
 - (1) Open command prompt by typing 'cmd' into the windows search bar
 - (2) Find where RED.py is saved by following the path using 'cd' to go up a directory and 'cd..' to go down a directory e.g. if RED.py is saved in the downloads file of my computer in the 'RED-master' folder. I will type 'cd Downloads' press enter and then type 'cd RED-master' and press enter again
 - (3) When you are in the correct directory path, run the program by simply typing 'RED.py'
2. Follow the text that appears in the Terminal
3. Enter all parameters into the "Input Parameter" window which pops up
4. Enter the number of dose files you wish to calculate from for plan 1 and plan 2
5. Browse your computer for the correct DICOM dose files (e.g. RD12345etc.dcm)
6. If using exported DICOM files from OTP beware that an extra dose file is also exported which is a compressed version of the others, this has no further information about your treatment plan and should be avoided from use in RED
7. Browse your computer for the DICOM structure file corresponding to the patient (e.g. RS12345.dcm)

8. Click "Calculate"
9. The length of time required to calculate the EQD2 DVH is directly related to the amount of structures in the DICOM files (more structures = longer wait). During this time the Input Parameter window may say "Not Responding". This is normal and is due to the amount of data RED is iterating through to select the correct dose and volume data.
10. Once calculated two windows will appear, the EQD2 DVHs of Plan 1 (blue) and Plan 2 (green) individually and the summed Plan 1 + Plan 2 EQD2 DVH (red).
11. Use the toolbar at the bottom of the summed EQD2 DVH window to pan, zoom and save the image. By moving the mouse over the graph area XY coordinates are seen in the bottom right hand corner of the window and correspond to EQD2 dose in Gy and Volume in Percent respectively.

For any questions contact Rhonda on 0863664137 or rhondaflynn@gmail.com