r-i-v-e-t is a writing tool for engineering calculation reports that may be used either as a Python library or as a command line program. It is designed to work with **on-c-e** (**O**pe**N** **C**alculation **E**cosystem).

From the command line:

```
python rivet ddcc_ rivetfilename.py  (or batch_of_files.txt)
```

As a library:

```
from rivet_lib import *
```

Like **on-c-e** its focus is on improving the resuse, review, reach and reliability of engineering calculation reports. Code and documentation are here: https://github.com/r-i-v-e-t . For an overview of **on-c-e** see https://github.com/on-c-e .

A **r-i-v-e-t** file is a Python text file containing engineering design and analysis calculations written in ASCII or UTF-8. Any text processor (i.e. Notepad) can be used to create and edit a design file but an IDE or code editor significantly improves efficiency and is strongly recommended. **r-i-v-e-t** documentation is written around the code editor Microsoft VS Code. The *rivet* program has a single primary function, *__r("rivet-string")*, which takes a single string as argument. The first character of each string is one of **r, i, v, e, t**, which controls the rivet syntax and operations within that context. The characters signify the following:

```
r -> run Python code
i -> insert text, tables and figures
v -> assign values to variables
e -> evaluate equations
t -> generate and manipulate tables and plots
```

r-i-v-e-t evaluates rivet files (designs) and outputs calculation files (calcs) in UTF-8, HTML or PDF formats. Design files have names of the form *ddcc_rivetfilename.py* where dd and cc are two digit numbers identifying the division and calculation number respectively. Division numbers apply to **r-i-v-e-t** reports, which are organized compilations of calcs. Calc output files retain the design file name with a modified file-type suffix (txt, html, pdf), depending on the output type selected.

r-i-v-e-t files exisit within the context of a project. The user initially sets up a **r-i-v-e-t** project by creating a project folder structure using the following naming conventions:

```
User_project_name
    |- calcs
       |- scripts
       |- sketches
       |- tables
    |- reports
       |- html
          |- figures
          |- append
       |- temp
```

Design (input) files and utf8 calc (output) files are read from and written to the *calcs* folder. Supporting design files are stored in the *calcs* sub-folders. All supporting files are ASCII or UTF-8 files, as are the rivet design and utf8-calc files. A zip of the *calc* folder and sub-folders may be uploaded to a shared database.

pdf- calcs and reports are written to the *reports* folder. **html-** calcs and reports are written to the *html* folder. Images (png and jpg) and PDF reference documents, used in **pdf-** and **html-** calcs and reports, are stored in the *figures* and *append* folders respectively.