Informatics for Astronomers - WS2019

Miguel Verdugo, Gerald Mosenlechner, Roland Ottensamer, Leopold Haimberger

Exercise sheet 9 - Documentation, quality control and misc

Your preparation of exercises should include two aspects:

(1) Try to present exercises in a way that everyone can follow (even if that person didn't do the exercise at all), so please explain all the (vital) parts of your solution in a slow and comprehensive way.

(2) Try to also include some background information where applicable, and/or explain the possible context/motivation for the given exercise.

---

1. Please write the docstrings for our class `Vector` and its implemented methods (distance, dot and cross products).
   - Please show the most common formats (`numpydoc`, `google` and `reST`) and discuss their differences.
   - How do you access the doctrings within in a `python` session?
2. Write some simple tests for our class `Vector`. A test suite should look like

   ```
   class TestVector:

       def test_method1(self):
           assert "condition"

       def test_method2(self):
           assert "another condition"
   ```

   (a test suite can be executed with the following command: `python -m pytest tests.py` or simply `pytest test_file.py`)
3. Testing is an important part in software development. Please discuss the differences between *unit testing*, *integration testing* and *compliance testing*.
4. Please create (with an editor) a simple webpage that include some pictures, text and links to your favorite website.
   - Open the webpage with your browser and show us the source.
   - Now go to http://www.google.com and show us the source code.

   Opinions?

5. The Sloan Digital Sky Survey has produced catalogs of millions of objects on the sky. These catalogs are stored in `SQL` databases and are easily accessible through their webpages. For example, http://skyserver.sdss.org/dr15/en/tools/search/radial.aspx allows to search of objects within a certain distance from the central position. In reality that web page execute a `SQL` command, which is also shown along the results of the query.

   Using the `SQL` form http://skyserver.sdss.org/dr15/en/tools/search/sql.aspx is possible to execute arbitrary queries. Copy the previous command here and execute it again. Play a bit with the parameters here.

   - What is the advantage of the "pure" `SQL` form in comparison with the radial form used at the beginning?
   - What do you think about the `SQL` syntax?
   - Is possible to access `SQL` databases with `python`?