

VTKExamples

Introduction

The VTKExamples site was originally developed by Bill Lorensen as a series of Wiki pages e.g. [VTK/Examples/Cxx](#) where C++, Tcl and Python examples were written illustrating a lot of the capabilities of VTK beyond those used in the testing regime. This was when I got to know Bill through contributing examples.

On 8th May 2017, Bill created the current site at [VTKExamples](#) migrating the examples from the old site and developing a better indexed online site where users could peruse the examples. The examples were expanded to other languages like Java and CSharp, and he also developed a better layout of the site. Additionally, work was done on moving the VTK Book online with a markdown and PDF version being developed. Progress in subsequent years related to moving the examples in the VTK source directory and writing lots of new examples. We also had lots of contributions from the community. Bill trusted me so much that he gave me administration rights which allowed me to review contributions and write some of the administration code found in `src\admin`.

Layout

Key files and folders

At the top level of the `VTKExamples` folder are the `CMake` files and a `CMake` folder. Two other folders of interest here are `site` and `src`.

`site`

This folder contains the html files and other files that form the site [VTKExamples](#).

`src`

This folder contains all the source files and necessary scripts to generate the `site` folder.

In `src/admin` are other scripts that scrape the repository, validate markdown files and generate classes used/not used in the examples.

Of course the other folders of interest in the `src` directory are the language folders. Within these folders the examples are grouped in to various "kits" e.g. in the case of `src/Cxx/Visualization/`, `Visualization` is the kit. In the `Cxx` folder each kit contains a `CMakeLists.txt` file to generate code and tests. Other folders here contain markdown files that appear in the `site`, for examples `VTKBook`. The markdown files specific to a language here e.g. `Cxx.md` are used to register and provide further groupings of the source code that are more useful to the reader of the web site.

Additionally there is a `Testing` folder:

- `src/Testing/Baseline/` holds baseline images grouped by language and kit. These images are also used to illustrate the examples.
- `src/Testing/Data/` holds the test data files.

Instructions for developers users and guidelines are found in `src/Instructions/`.

Current State

Currently there are 1758 examples and 1870 images on the site. At present, only the C++ code is tested, namely 1049 examples.

Since Bill's death on 2019 December 12, the site has been relatively static. The last time the `site` folder (and consequently the web pages) were updated was 03 November 2019.

Since then, there have been a few contributions and I have also pushed VTK 9.0 changes along with least one new example.

Consequently there is a disconnect between the web site and the source folders. The new examples do not appear on the web site and some images have changed. The changed images are visible however the changed code producing them is not on the web site. All the changes are in the `src` folder.

The main reason for this is that:

- I can administer the site, add contributions etc. but I do not have password access.
- The code to scrape the repository and update the web pages is very old and relatively undocumented.

To address this I have done some recent work on a mirror of the site (outlined below). I have used a mirror so that the original site doesn't break.

Recent Work

I have created a repository [VTKExamples mirror](#) by mirroring the original VTKExamples site. Web pages of this site are found at [VTKEx](#)

Work done:

- Cache files have been renamed and moved from `src/admin` to `src/Cache`
- All the Python files in `src/admin` will now run with Python 3.5 and greater. Tested with Python 3.8.3.
- `ScrapeRepo.py` is a completely rewritten version of `ScrapeRepo`. It is now documented and all globals have been removed. Here is the result of running this:

```
ScrapeRepo Summary
C++ examples:          1049
CSharp examples:       121
Python examples:       356
Java examples:         232
Total examples:        1758
Doxygen added:         2597
Thumbnails added:      1870
Test Image Cache hits: 1531
Test Image Cache misses: 0
VTK Modules Cache hits: 1049
VTK Modules Cache misses: 0
Time taken: 2.194s
```

Subsequent conversion of the files in docs to html files in site using mkdocs takes about 300s, mimifying the html takes a bit longer.

As far as I know all the links seem to be working correctly.

I have noticed a couple of wrong links within the VTKBook chapters ... not worth fixing at this stage.

FYI: The site is about 600MiB with 1857 files.

Tarballs: I discovered that these reside on another site [VTKWikiExamplesTarballs](#), these tarballs at that site have not been modified for for 12 months or so, hence some of the code in these is really out of date. For now, all the links for the tarballs point to the `src/Tarballs` site in this repository, it is about 21.1MiB and contains 1050 files.

So, it is now possible to mirror the site and generate a new set of web pages.

Way forward

It must be said the site is very well designed and relatively easy to find a specific example. This is due in a large part to lots of images, and the indexing: **VTKExamples** on the left, and **Table of contents** on the right. Notice also the subtle shading of the VTK modules and declarations - Bill spent a lot of work on this.

This makes it really useful for teaching, funding submissions, and, if you are new, or experienced, getting insights into new ways of writing VTK code. In contrast, the tests on the VTK site do not offer this versatility. Another use for the site relates to the testing of VTK. Quite often this site picks up failures that are not seen in the usual VTK testing regime.

It would be nice to:

1) Have a Linux machine in Kitware that holds the master repository. The rationale here is:

- Periodic updates of the website can be done. Along with automatically updating the VTK Mo
- A regular nightly ctest can be run. I currently do this occasionally.
- There will be backup administrators should problems arise.

2) Track the VTK master closely in the same way as the old examples in the VTK master did. This enhances the testing of VTK and also exposes users to new features. *Note:* This does not exclude older versions of VTK, we can and, do use VTK Version macros. I have also implemented a Deprecated folder where code that no longer builds is stored.

3) There is a bit of work that needs to be done in the areas of:

- Reworking the CMake files.
- What to do with these modules `RenderingOpenVR, Powercrust, PoissonReconstruction, SplineDrivenImageSlicer, RenderingOpenGL`
- I do have some issues with git-lfs.

4) Within Kitware remove all references to the original examples site. (We had someone trying to download examples from [VTK/Examples/Instructions/ForUsers](#))

5) If we generate a new site it would essential to have re-direct from the current VTK examples site along with a paragraph or two celebrating Bill's achievements.

I am prepared to spend a lot of time achieving these goals with the help of the community and Kitware.