PH502: Scientific Programming Concepts

Irish Centre for High End Computing (ICHEC)

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Overview

- Finally we come to documentation.
- It is probably the least favourite task of the programmer, providing documentation for your code.
- Even if you have made some documentation, it is quite easy for it to become out of date.
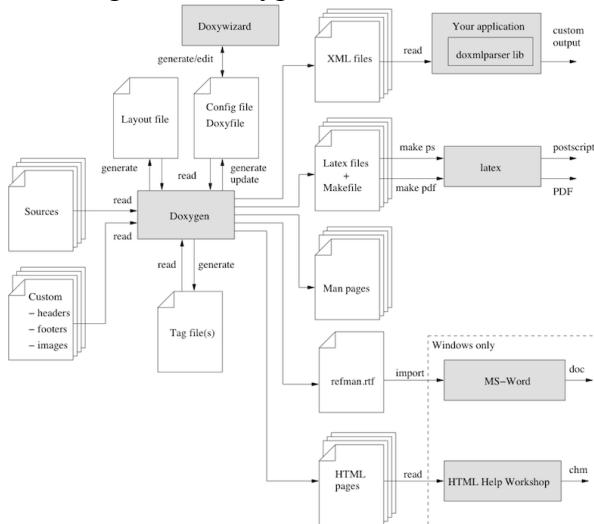- Ideally you want to have the documentation in the same file as the code.

Comments

- Comments in code can improve its interpretabilty, along with appropriate variable names and formatted code (indentation).
- Example comments are below

```
a=1; // Comment
// Another comment
/*
    Block
    Comment
*/
```

```
a=1    ! Comment
!
! Multi line
! Comment
```

- There is software available that can take the comment lines of a program and construct a user manual. The advantage of this approach is that the manual can be kept up to date with the code.

Doxygen

- Doxygen will automatically document a set of programs given a set of comment lines and directives. It works with C an FORTRAN code.
- Below is a flow diagram of Doxygen.

Using Doxygen

- To initialise the configure file type "doxygen -g Doxy.config". It can then be edited (or use the wizard) to customize it for the job at hand.

- Doxygen interprets modified comment blocks, typically these blocks are just before the program unit to which they refer.

```
/*! @brief "text".
 *
 * More detailed text.
 */
```

```
!--------------------
!> @brief "text".
!>
!> More detailed text.
!--------------------
```

- Doxygen has many commands or directives and we shall only mention a few of them.

- The basic HTML layout has a mainpage, "namespace/module" tab and a "file" tab.

- A call graph can also be generated, showing links between the program units. An example is on the next slide.

Main Page

Doxygen Comment Example Version 1.0

Main Page	**Files**		Search

Doxygen Comment Example Documentation

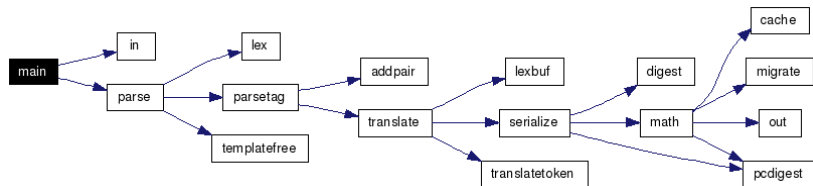This short program contains some sample code illustrating how the doxygen comments must appear

- for documenting a file, and in particular
- for documenting functions

when we intend to use the doxygen tool for preparing HTML documentation of our code. Note that this file is intended *only* to illustrate a particular set of **commenting conventions** and how they show up when implemented with doxygen. Your actual requirements may not be the same as shown here. Im particular you may need less (or more) than is shown here.

Pay careful attention, in the source code,
to the distinction between the special doxygen comments,
which produce output here, and regular C++ comments which are ignored by doxygen, and look at the source code to see how line breaks in this paragraph are produced.

Generated on Tue Sep 4 2012 17:30:54 for Doxygen Comment Example by **doxygen** 1.7.4

Call Graph

Doxygen Commands

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- The doxygen commands can be preceded by a \ or @. Below is a a selection.

Command	Description
@mainpage	Main page title
@section	Subtitle and text for main page
@file	File documentation
@author	Program author
@brief	Description of coding unit
@param[in,out]	Argument description

- To generate the documentation type "doxygen Doxy.config".
- Here is a site if you want to dabble,
  https://www.star.bnl.gov/public/comp/sofi/doxygen/starting.html .

Summary

- This week we discussed:
  1. composite variables,
  2. Makefiles,
  3. version control (git),
  4. Documentation through Doxygen.