Documentation with Doxygen
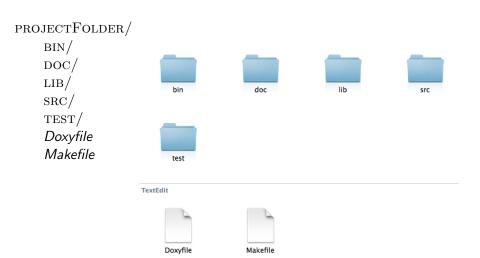
Daniel Bankmann, Benjamin Unger

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What is Doxygen?

- Derives from **doc**umentation**s** and **gen**erator
- Tool for *automatic* analysis and documentation of software
  - ▶ Easily write structured and readable documentations with pleasant markup
  - ▶ Provide visualization of inheritances between different parts of code
  - ▶ Keep documentation and comments in the same files
  - ▶ ...
- Doxygen...
  - ▶ is open source (GNU General Public License)
  - ▶ works for C++, C, Java, Python, Fortran, PHP, C#
  - ▶ can generate the documentation as HTML, LaTeX, XML,...
- Current Version: 1.8.8 (21. August 2014)

Project structure

PROJECTFOLDER/
    BIN/
    DOC/
    LIB/
    SRC/
    TEST/
    Doxyfile
    Makefile

Configuration - Doxyfile

- Create with `doxygen -g`
- Well documented, just fill in the blanks
- Important settings:
  - ▶ `PROJECT_NAME = MyProject`
  - ▶ `OUTPUT_DIRECTORY = ./doc`
  - ▶ `INPUT_DIRECTORY = ./src ./lib ./test`
  - ▶ `OPTIMIZE_FOR_FORTRAN = YES`
  - ▶ `FILE_PATTERNS = *.f`
  - ▶ `GENERATE_HTML = YES`
  - ▶ `EXTRACT_ALL = YES`
  - ▶ `SOURCE_BROWSER = YES`

Doxygen and Matlab I

Setup Doxygen for Matlab project

- Copy `MatlabDocMaker.m` from the folder `mtoc/tools` in your project directory.
- Open `MatlabDocMaker.m` and edit the function `getProjectName`
- Copy the folder `config` from `mtoc/tools` in the `project/doc` directory.
- Delete `class_substitutes.c` from `config` folder.
- Edit `developers.c` or delete it.

Workflow

- Call `MatlabDocMaker.setup`
- Call `MatlabDocMaker.create`
- Call `MatlabDocMaker.open`

Doxygen and Matlab II - tips and tricks

Keep Doxyfile and mtoc filter:

- Open `MatlabDocMaker.m`
- Find the function `MatlabDocMaker.create`
- Uncomment the lines `delete(doxyfile);` and `delete(filter);`

Create `html` documentation in its own folder

- Open `doc/config/Doxyfile.template`
- Find `HTML_OUTPUT` and set its value to `html`
- Edit function `MatlabDocMaker.open` and set correct path to `index.html`
- Edit postprocessing part in `MatlabDocMaker.create`

New Postprocessing Procedure

```
% Postprocess
htmlDir = outdir;
if exist(fullfile(htmlDir,'index.html'),'file')~=2
  htmlDir = [outdir,filesep,'html'];
end
fprintf('running mtoc++ postprocessor...');
[~,postwarn] = system(sprintf('%smtocpp_post "%s" 1>%s',...
  ldpath,htmlDir, strs.null));
if ~isempty(postwarn)
  warn = [warn sprintf('mtoc++ postprocessor messages:\n')...
    postwarn];
end
```

Common keywords

Command	Description
@param [(dir)] name { desc }	Define parameter *name* with optional direction *(dir)*, $dir \in \{in; out; in,out\}$
@date desc	Set date
@author desc	Set author
@note desc	Create note (special markup)
@warning desc	Create warning (special markup)
@todo desc	Create todo item (special markup)

`http://www.stack.nl/~dimitri/doxygen/manual/commands.html`

Markup

Doxygen uses *Markdown*'s formatting syntax, e.g.:

Markup	Description
Paragraphs	Seperate two paragraphs by at least one empty line
Headers	# Level 1 Header #
	## Level 2 Header ##
Emphasis	_italic text_
	__bold text__
Lists	Use different identifiers in {+, -, * } to define item levels
Latex inline	@f$ latex @f$

http://www.stack.nl/~dimitri/doxygen/manual/markdown.html
http://www.stack.nl/~dimitri/doxygen/manual/formulas.html