

# Documentation

Devyani Tanna  
CS 302

# Doxygen

- Doxygen is a program documentation generator
  - It provides a highly refined and organized presentation of program documentation
- Doxygen is free
  - (GNU General Public License)
- Doxygen is cross-platform
  - Can be used on most Operating Systems
- Doxygen supports C++, C, C#, Objective-C, Java, Python, IDL, VHDL, Fortran, and D

# Output

- Doxygen can provide the following outputs:
  - HTML
  - LaTeX
  - RTF
  - XML
  - Man page
  - DocBook

# Installation

- Debian or Ubuntu
  - `sudo apt-get install doxygen`
  - `sudo apt-get install doxygen-gui`
- There are several download sites, including the following that support the Debian or Ubuntu Linux distributions:
  - <http://www.stack.nl/~dimitri/doxygen/download.html>

# Installation

- For the Latex installation
  - `sudo apt-get install texlive-latex-base`
  - `sudo apt-get install texlive-fonts-recommended`
  - `sudo apt-get install texlive-extra`
    - this works most of the time but if it doesn't, you can use the **texlive-full** selection shown next
  - `sudo apt-get install texlive-full`
    - this operation requires about 3 Gb of HD space and will take a while depending on your Internet connection and computer speeds; however, it may be the only way to be assured of fully correct operation of the “make pdf” action

# Document

- Use the ProgramStandards document for instructions on:
  - how to document file headers (.h, .cpp)
  - how to document method or function headers

# Document

- For more information on comment blocks, there are several references, including the following:
  - <http://www.stack.nl/~dimitri/doxygen/manual/docblocks.html>
  - <https://www.stack.nl/~dimitri/doxygen/manual/commands.html>

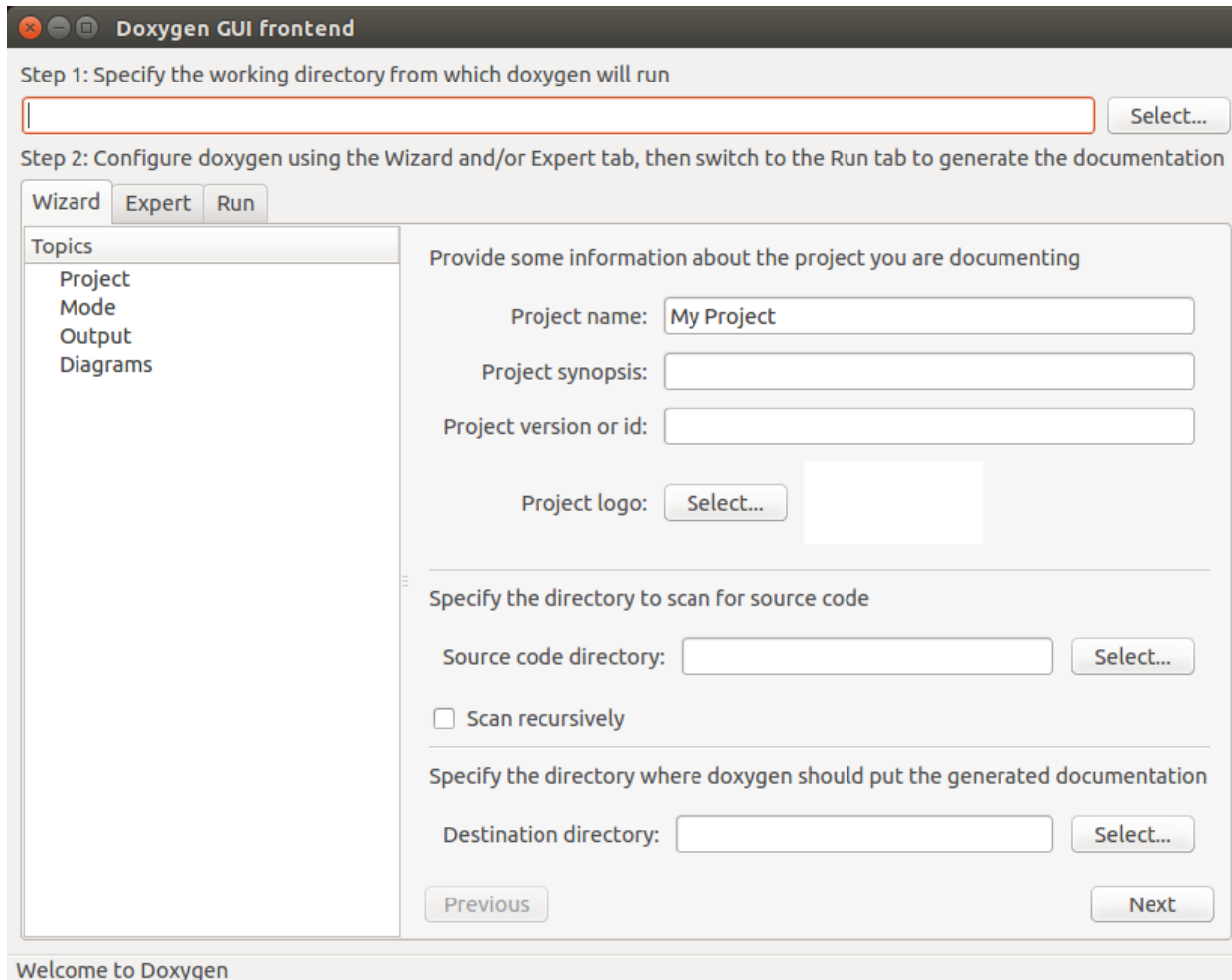
# Usage (Option 1): Command Line

- Generate a configuration file
  - `doxygen -g <config-file>`
    - Default file: Doxyfile
- Edit configuration file as you see fit
  - You may use the following as a reference:
    - <https://www.stack.nl/~dimitri/doxygen/manual/customize.html>
- Generate the documentation
  - `doxygen <config-file>`



# Usage (Option 2): doxywizard (GUI)

**Type “doxywizard” in a terminal screen to open the following window**



The screenshot shows the 'Doxygen GUI frontend' window. It has a title bar with standard window controls. The main content area is divided into two sections. The top section, 'Step 1: Specify the working directory from which doxygen will run', contains a text input field and a 'Select...' button. The bottom section, 'Step 2: Configure doxygen using the Wizard and/or Expert tab, then switch to the Run tab to generate the documentation', contains three tabs: 'Wizard' (selected), 'Expert', and 'Run'. Under the 'Wizard' tab, there is a 'Topics' list on the left with items 'Project', 'Mode', 'Output', and 'Diagrams'. The main area of the 'Wizard' tab is titled 'Provide some information about the project you are documenting' and contains several input fields: 'Project name' (with 'My Project' entered), 'Project synopsis', 'Project version or id', and 'Project logo' (with a 'Select...' button). Below this, there is a section titled 'Specify the directory to scan for source code' with a 'Source code directory' input field and a 'Select...' button, followed by a checkbox for 'Scan recursively'. The bottom section is titled 'Specify the directory where doxygen should put the generated documentation' and contains a 'Destination directory' input field and a 'Select...' button. At the bottom of the window, there are 'Previous' and 'Next' buttons. A status bar at the very bottom says 'Welcome to Doxygen'.

Doxygen GUI frontend

Step 1: Specify the working directory from which doxygen will run

Step 2: Configure doxygen using the Wizard and/or Expert tab, then switch to the Run tab to generate the documentation

Wizard Expert Run

Topics

- Project
- Mode
- Output
- Diagrams

Provide some information about the project you are documenting

Project name: My Project

Project synopsis:

Project version or id:

Project logo: Select...

Specify the directory to scan for source code

Source code directory: Select...

☐ Scan recursively

Specify the directory where doxygen should put the generated documentation

Destination directory: Select...

Previous Next

Welcome to Doxygen

# Doxywizard – Project Screen

Doxygen GUI frontend +

Step 1: Specify the working directory from which doxygen will run

/home/michael/Documents/CS\_302/PA01 Select...

Step 2: Configure doxygen using the Wizard and/or Expert tab, then switch to the Run tab to generate the documentation

Wizard **Expert** Run

Topics

- Project**
- Mode
- Output
- Diagrams

Provide some information about the project you are documenting

Project name: PA01 - Linked List

Project synopsis:

Project version or id:

Project logo: Select...

Specify the directory to scan for source code

Source code directory: /home/michael/Documents/CS\_302/PA01 Select...

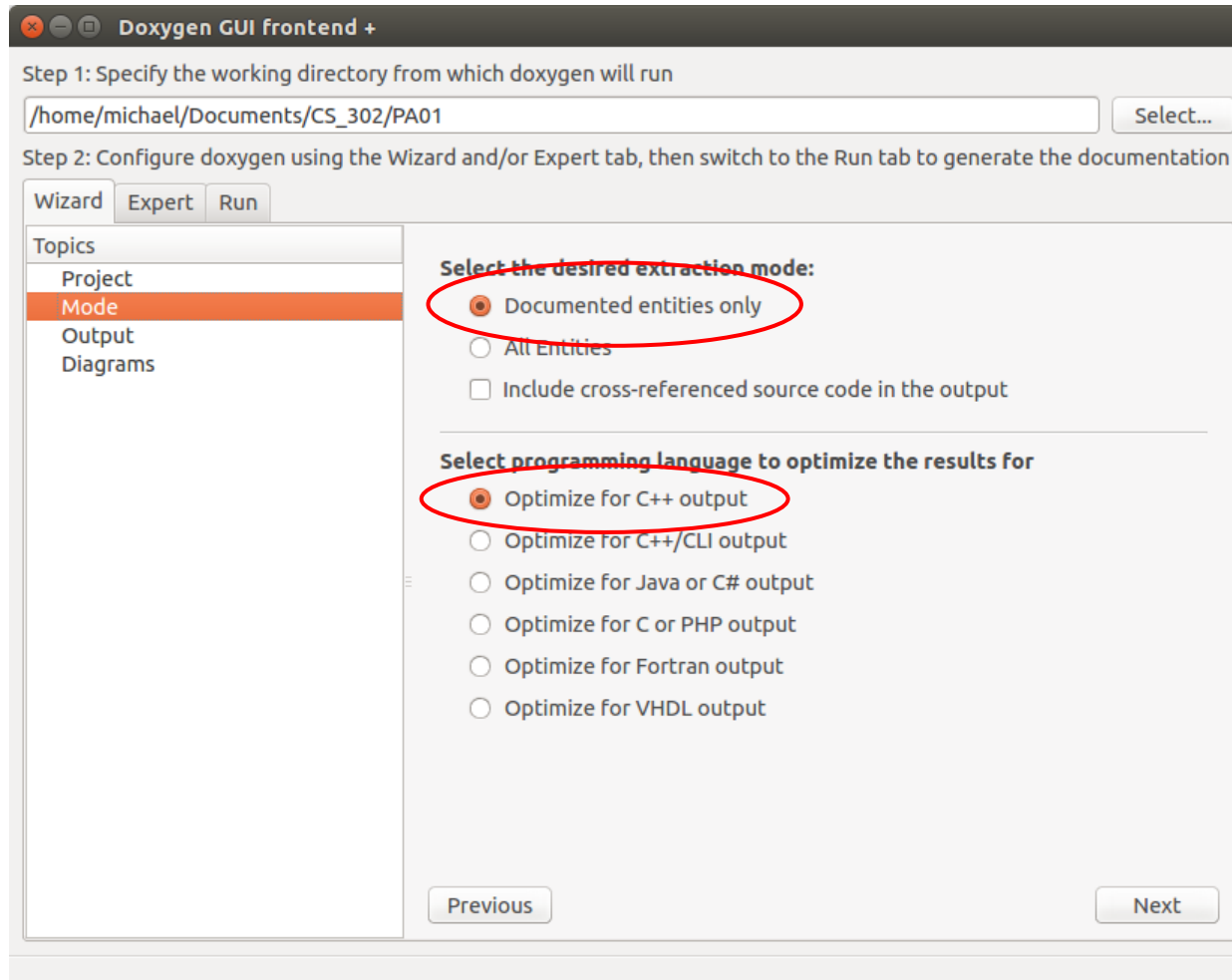
☐ Scan recursively

Specify the directory where doxygen should put the generated documentation

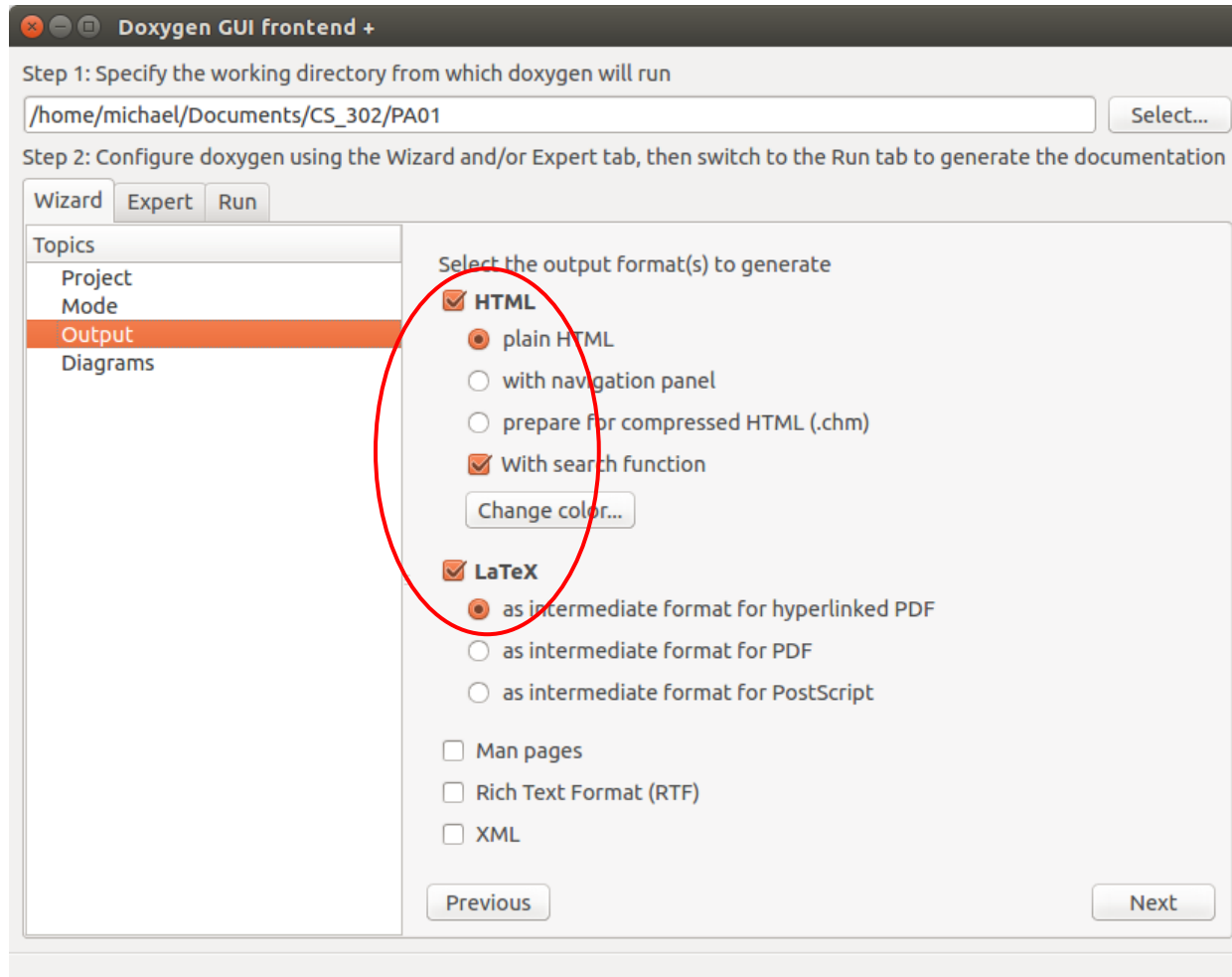
Destination directory: /home/michael/Documents/CS\_302/PA01/DoxygenOutput Select...

Previous Next

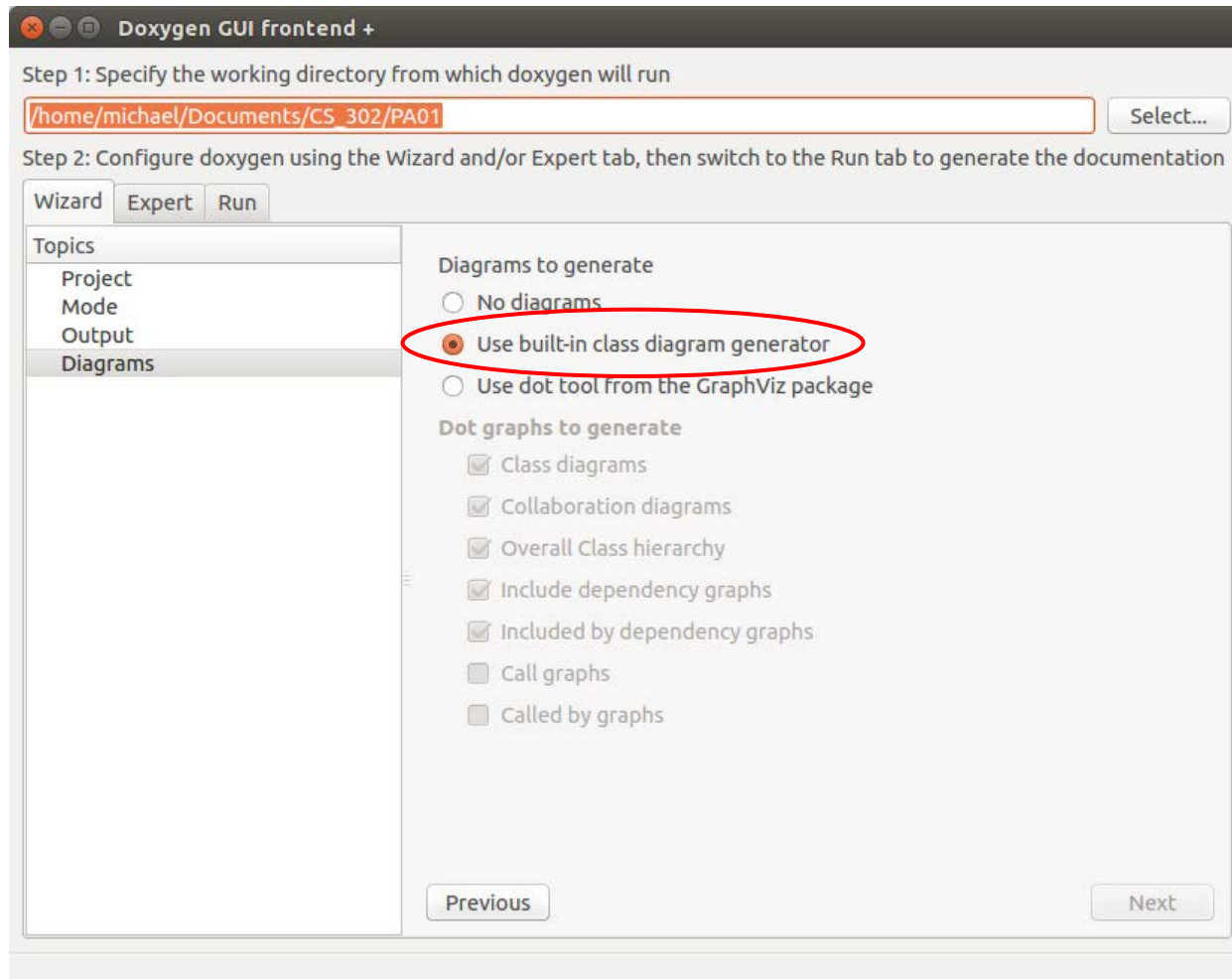
# Doxywizard – Mode Screen



# Doxywizard – Output Screen

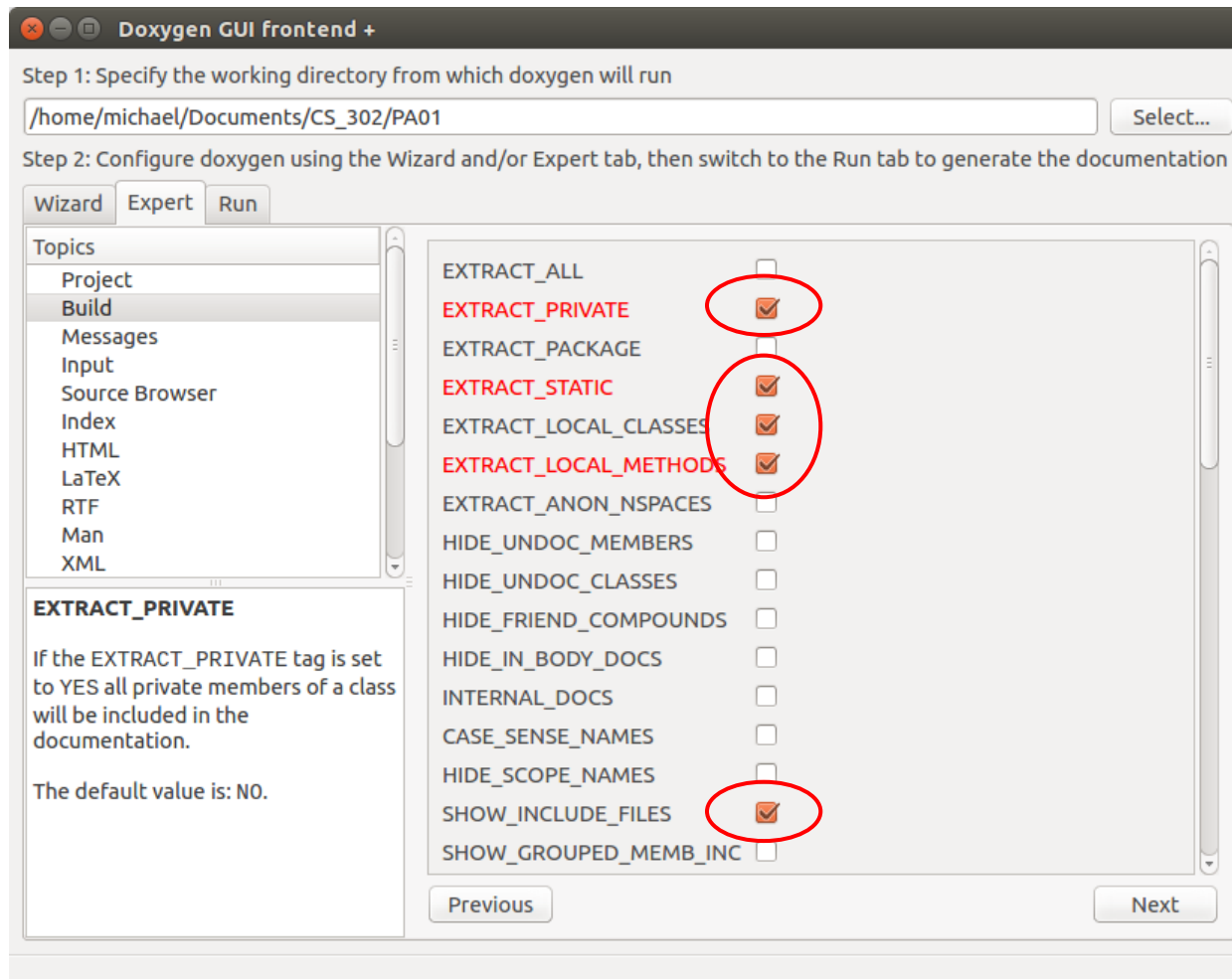


# Doxywizard – Diagrams Screen



# Doxywizard – Expert/Build Screen

There are other boxes below but they remain unchanged



# Doxywizard – Expert/LaTeX Screen

Doxygen GUI frontend +

Step 1: Specify the working directory from which doxygen will run

/home/michael/Documents/CS\_302/PA01 Select...

Step 2: Configure doxygen using the Wizard and/or Expert tab, then switch to the Run tab to generate the documentation

Wizard **Expert** Run

Topics

- Project
- Build
- Messages
- Input
- Source Browser
- Index
- HTML
- LaTeX**
- RTF
- Man
- XML

**MAKEINDEX\_CMD\_NAME**

The MAKEINDEX\_CMD\_NAME tag can be used to specify the command name to generate index for LaTeX.

The default file is: makeindex.

This tag requires that the tag GENERATE\_LATEX is set to YES.

**GENERATE\_LATEX** ☒

**LATEX\_OUTPUT** latex ...

**LATEX\_CMD\_NAME** latex ...

**MAKEINDEX\_CMD\_NAME** makeindex ...

**COMPACT\_LATEX** ☒

**PAPER\_TYPE** a4 ...

**EXTRA\_PACKAGES** + - ...

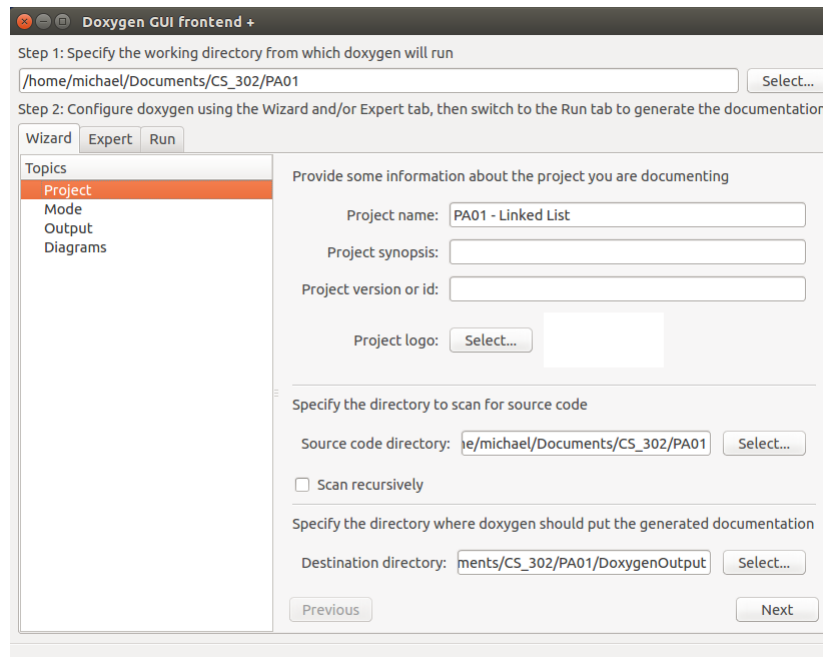
**LATEX\_HEADER** ...

**LATEX\_FOOTER** ...

Previous Next

# Doxywizard – Storing Configuration

**Doxygen can be saved as is, and the files and names changed in later use so you won't have to reset the configuration each time you use it. When closing Doxywizard, save the configuration to a recognizable filename located in a common directory. When you reopen the wizard, type the filename as a command-line parameter (e.g., **doxywizard myfilename**)**

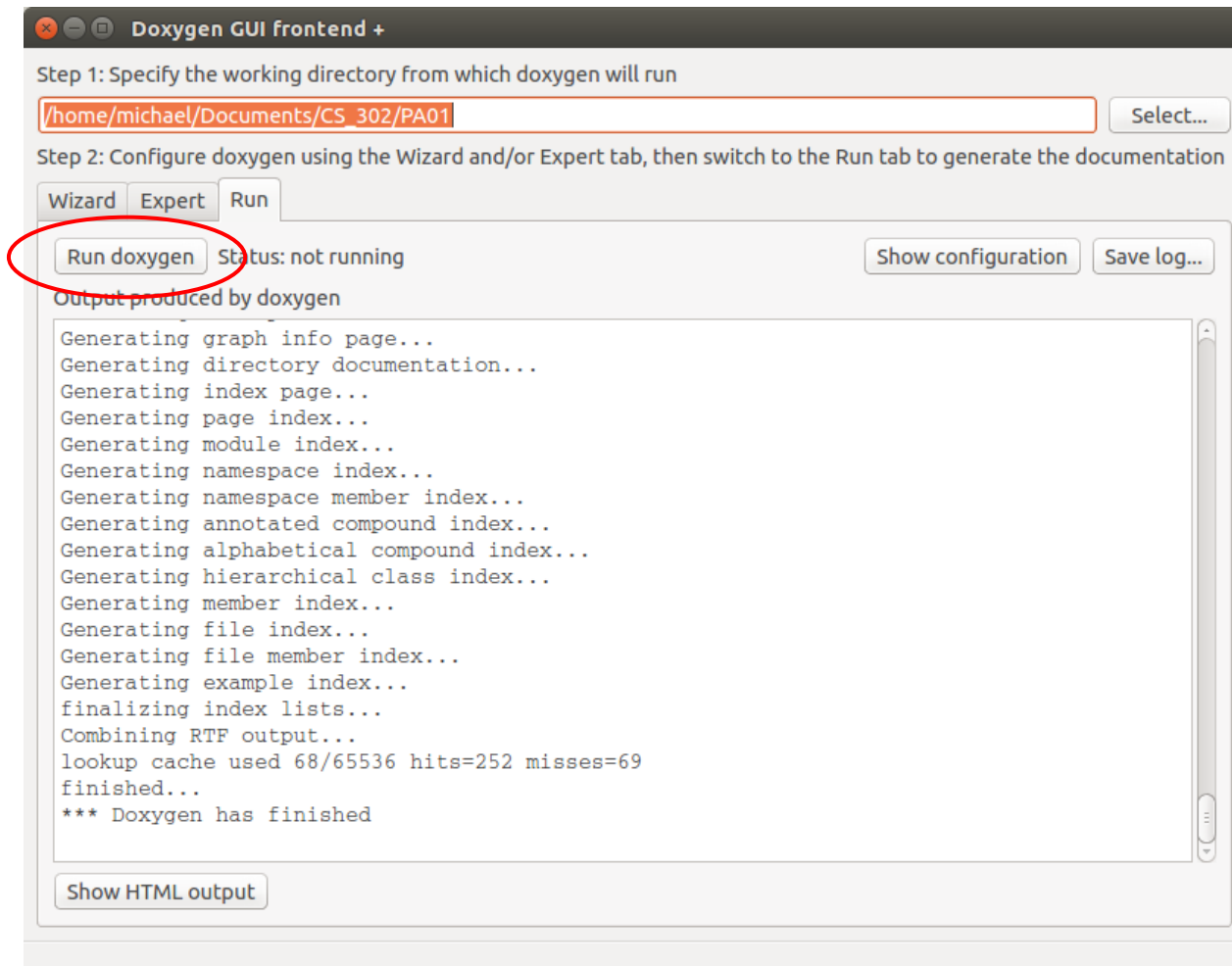


The screenshot shows the 'Doxygen GUI frontend' window. It has a title bar with standard window controls. The main area is divided into two sections. The top section, 'Step 1: Specify the working directory from which doxygen will run', contains a text field with the path '/home/michael/Documents/CS\_302/PA01' and a 'Select...' button. The bottom section, 'Step 2: Configure doxygen using the Wizard and/or Expert tab, then switch to the Run tab to generate the documentation', has three tabs: 'Wizard' (selected), 'Expert', and 'Run'. On the left of this section is a 'Topics' list with 'Project' selected, and 'Mode', 'Output', and 'Diagrams' below it. The main area of the 'Wizard' tab is titled 'Provide some information about the project you are documenting' and contains several input fields: 'Project name' (filled with 'PA01 - Linked List'), 'Project synopsis' (empty), 'Project version or id' (empty), and 'Project logo' (with a 'Select...' button). Below this is a section 'Specify the directory to scan for source code' with 'Source code directory' (filled with '/home/michael/Documents/CS\_302/PA01') and a 'Select...' button, and an unchecked 'Scan recursively' checkbox. The bottom section is 'Specify the directory where doxygen should put the generated documentation' with 'Destination directory' (filled with '/home/michael/Documents/CS\_302/PA01/DoxygenOutput') and a 'Select...' button. At the very bottom are 'Previous' and 'Next' buttons.



# Doxywizard – Run Screen

**Select “Run doxygen” to build the Doxygen files**



# HTML and LaTeX

- After running the program, the Doxygen output folder will now contain two sub-folders
  - HTML
    - you may open index.html to view the documentation in a browser
  - LaTeX
    - go to the LaTeX directory in a terminal window
    - type ***make pdf*** to get a PDF document
      - this may take a few seconds
    - this only works if all style files are available
      - i.e., the style files have been installed

Note: You must provide a PDF to the WebCampus upload along with your journal; if your own system does not create the PDF, you can use the ECC system(s)

# Helpful Links – There Are Several

- Doxygen Main Page
  - <http://www.stack.nl/~dimitri/doxygen/>
- Subset of Doxygen Tags
  - <http://www.d.umn.edu/~berna228/cs1521/doxygenCommands.html#cmdbrief>
- Example
  - [http://cs.stmarys.ca/~porter/csc/common\\_341\\_342/doxygen/doxygen\\_example.cpp](http://cs.stmarys.ca/~porter/csc/common_341_342/doxygen/doxygen_example.cpp)
- And Finally!
  - <http://en.wikipedia.org/wiki/Doxygen>

# doxygen Documentation

End