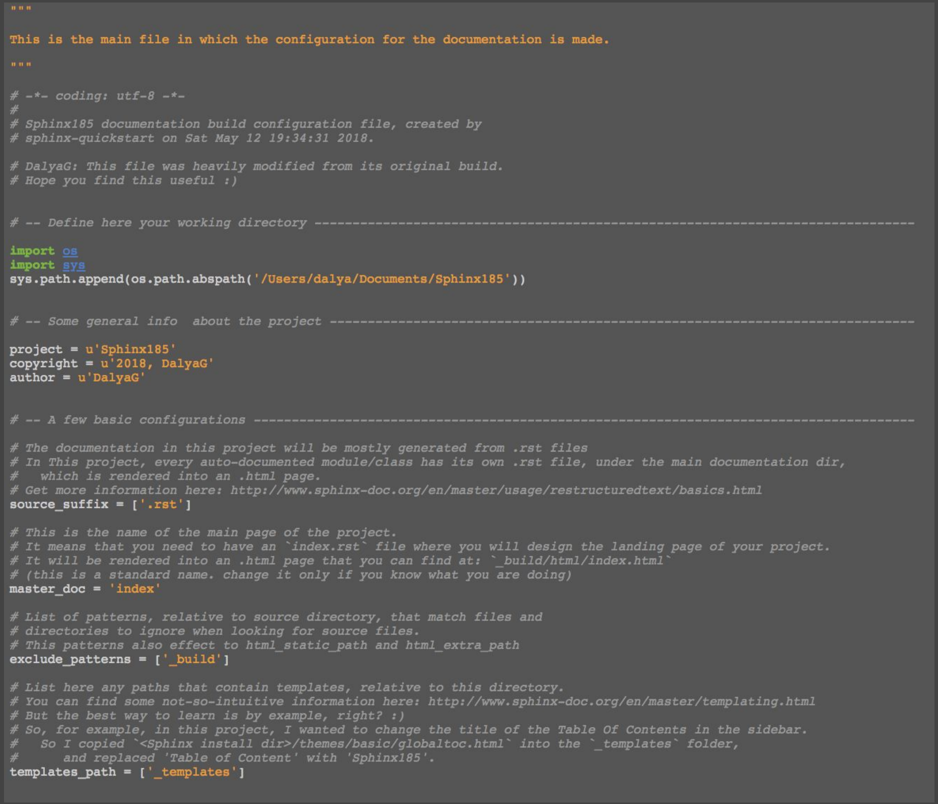
Help your colleagues help themselves - a Sphinx tutorial

Dalya Gartzman

github.com/DalyaG/Sphinx185

Main configuration file - conf.py

Part II - Main configuration file - conf.py



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# Hope you find this useful :)


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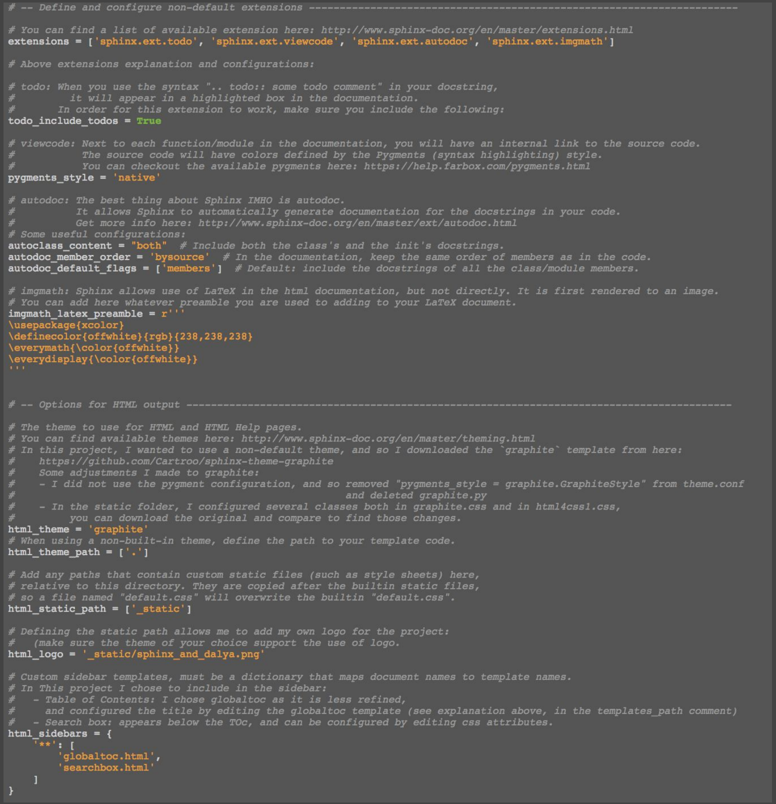

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# -- Define and configure non-default extensions ---------------------------------------------------------

# You can find a list of available extension here: http://www.sphinx-doc.org/en/master/extensions.html
extensions = ['sphinx.ext.todo', 'sphinx.ext.viewcode', 'sphinx.ext.autodoc', 'sphinx.ext.imgmath']

# Above extensions explanation and configurations:

# todo: When you use the syntax ".. todo:: some todo comment" in your docstring,
#          it will appear in a highlighted box in the documentation.
#        In order for this extension to work, make sure you include the following:
todo_include_todos = True

# viewcode: Next to each function/module in the documentation, you will have an internal link to the source code.
#            The source code will have colors defined by the Pygments (syntax highlighting) style.
#            You can checkout the available pygments here: https://help.farbox.com/pygments.html
pygments_style = 'native'

# autodoc: The best thing about Sphinx IMHO is autodoc.
#           It allows Sphinx to automatically generate documentation for the docstrings in your code.
#           Get more info here: http://www.sphinx-doc.org/en/master/ext/autodoc.html
# Some useful configurations:
autoclass_content = "both"  # Include both the class's and the init's docstrings.
autodoc_member_order = 'bysource'  # In the documentation, keep the same order of members as in the code.
autodoc_default_flags = ['members']  # Default: include the docstrings of all the class/module members.

# imgmath: Sphinx allows use of LaTeX in the html documentation, but not directly. It is first rendered to an image.
# You can add here whatever preamble you are used to adding to your LaTeX document.
imgmath_latex_preamble = r'''
\usepackage{xcolor}
\definecolor{offwhite}{rgb}{238,238,238}
\everymath{\color{offwhite}}
\everydisplay{\color{offwhite}}
'''


# -- Options for HTML output ------------------------------------------------------------------------------

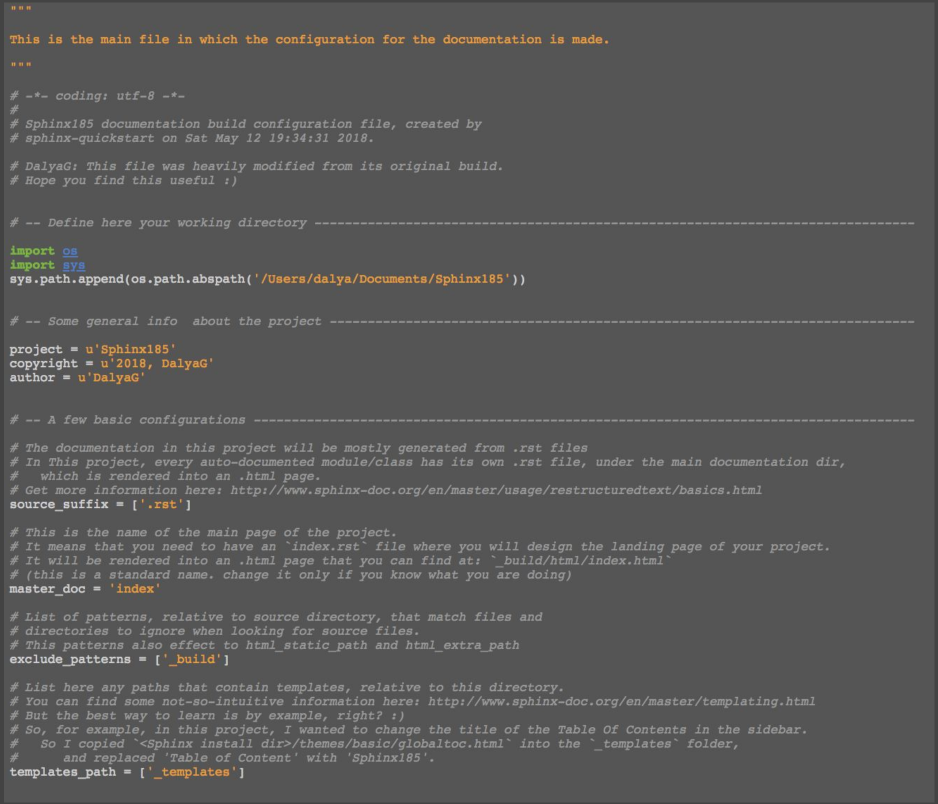
# The theme to use for HTML and HTML Help pages.
# You can find available themes here: http://www.sphinx-doc.org/en/master/theming.html
# In this project, I wanted to use a non-default theme, and so I downloaded the `graphite` template from here:
#    https://github.com/Cartroo/sphinx-theme-graphite
#    Some adjustments I made to graphite:
#    - I did not use the pygment configuration, and so removed "pygments_style = graphite.GraphiteStyle" from theme.conf
#                                                         and deleted graphite.py
#    - In the static folder, I configured several classes both in graphite.css and in html4css1.css,
#         you can download the original and compare to find those changes.
html_theme = 'graphite'
# When using a non-built-in theme, define the path to your template code.
html_theme_path = ['.']

# Add any paths that contain custom static files (such as style sheets) here,
# relative to this directory. They are copied after the builtin static files,
# so a file named "default.css" will overwrite the builtin "default.css".
html_static_path = ['_static']

# Defining the static path allows me to add my own logo for the project:
#   (make sure the theme of your choice support the use of logo.
html_logo = '_static/sphinx_and_dalya.png'

# Custom sidebar templates, must be a dictionary that maps document names to template names.
# In This project I chose to include in the sidebar:
#   - Table of Contents: I chose globaltoc as it is less refined,
#     and configured the title by editing the globaltoc template (see explanation above, in the templates_path comment)
#   - Search box: appears below the TOc, and can be configured by editing css attributes.
html_sidebars = {
    '**': [
        'globaltoc.html',
        'searchbox.html'
    ]
}
```

Part II - Main configuration file - conf.py



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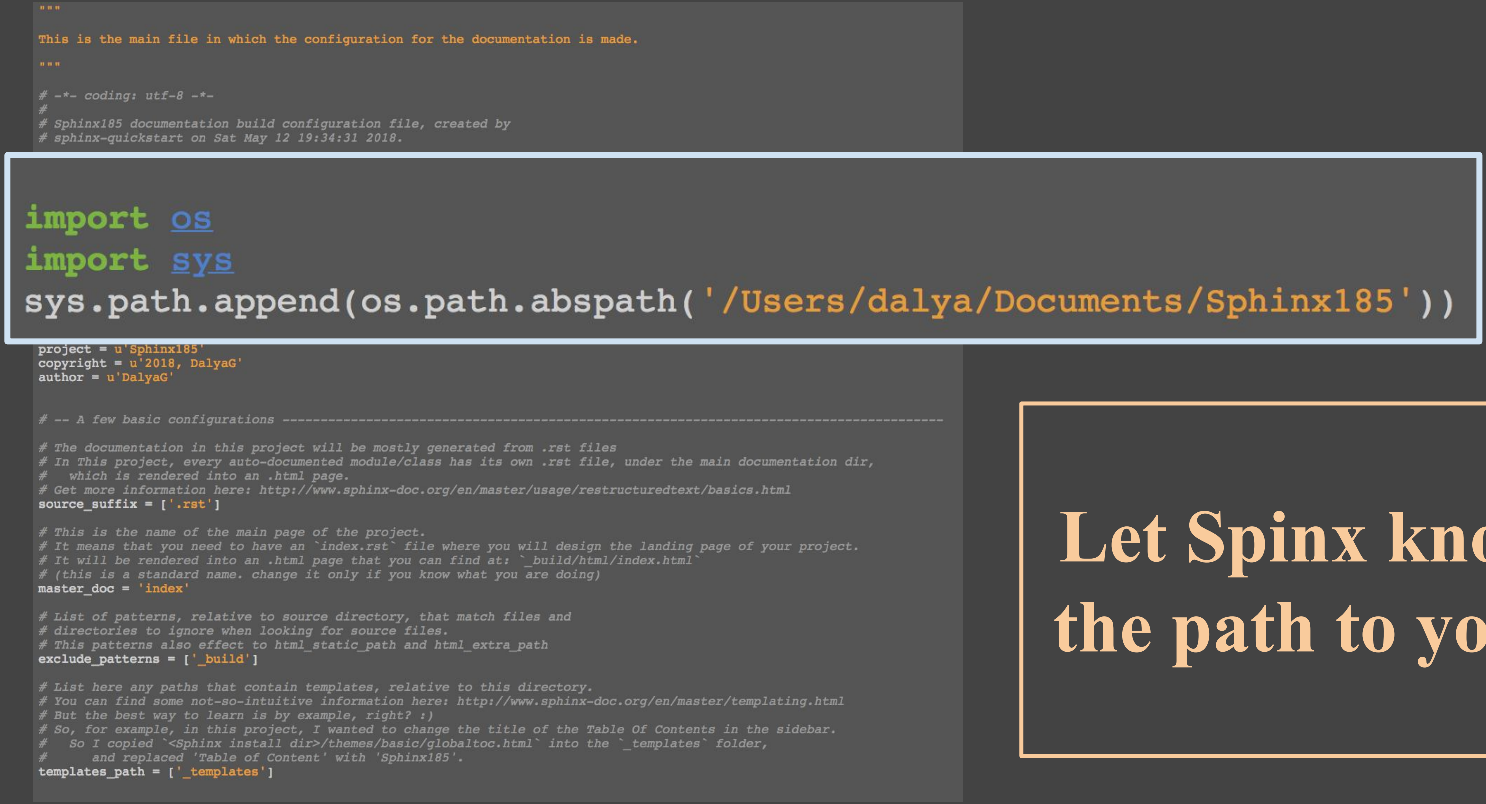

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Let Spinx know what is the path to your project

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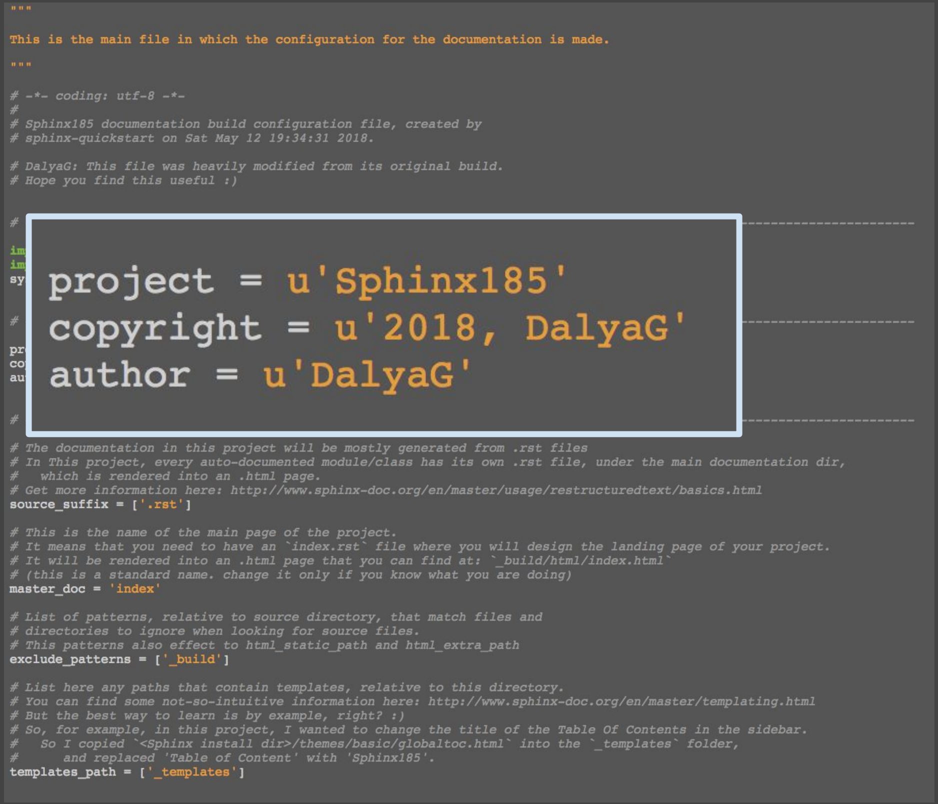

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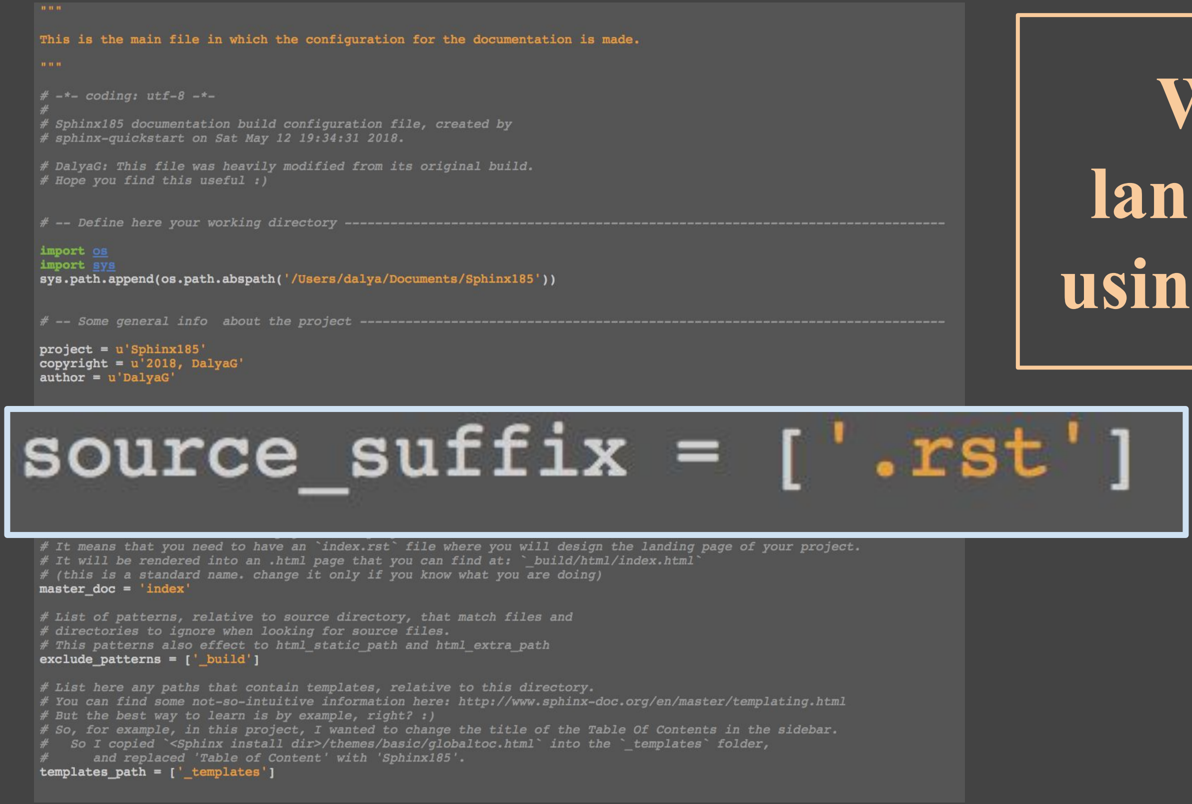

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What markdown languages will you be using to generate pages

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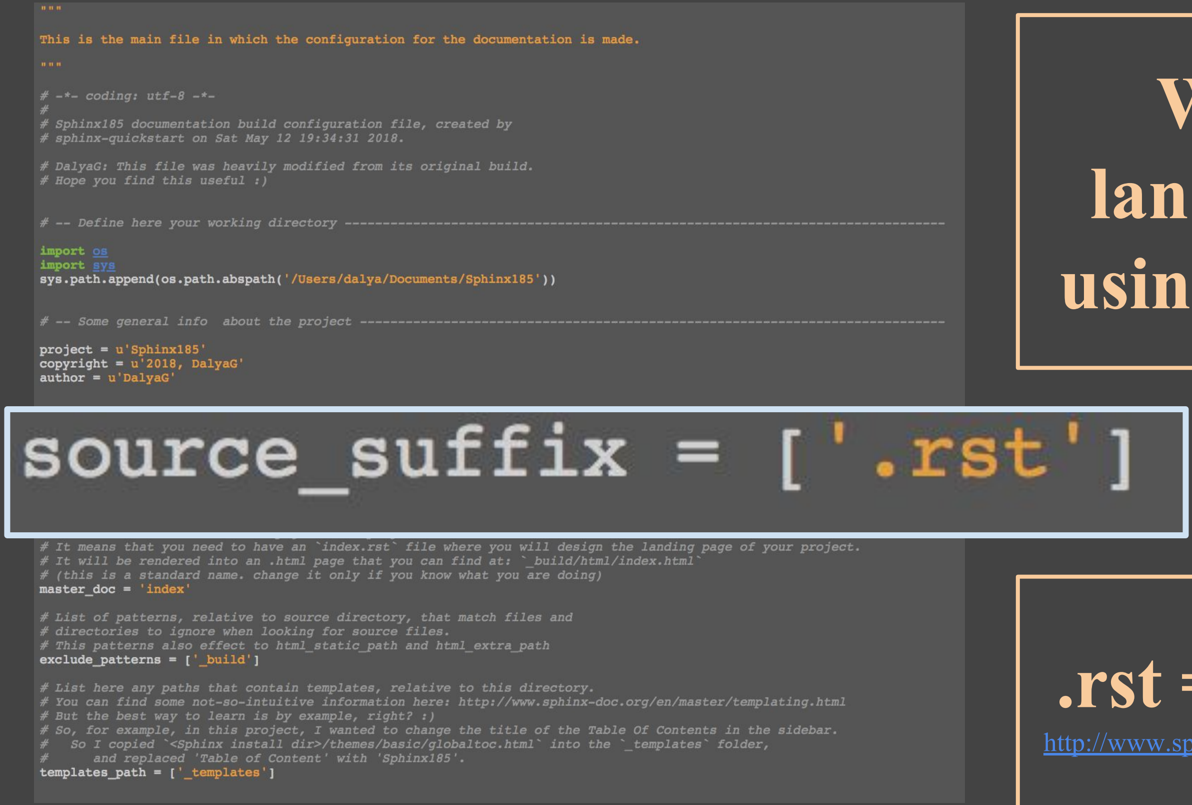

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.rst = reStructuredText

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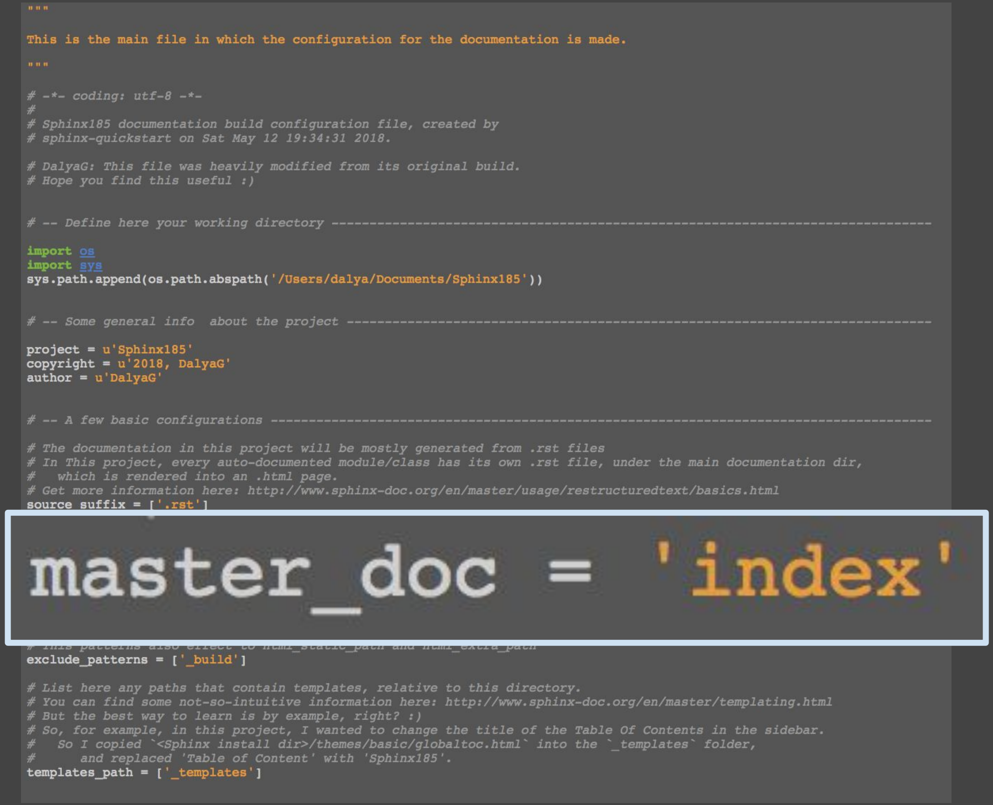

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What is the name of the master document (landing page)

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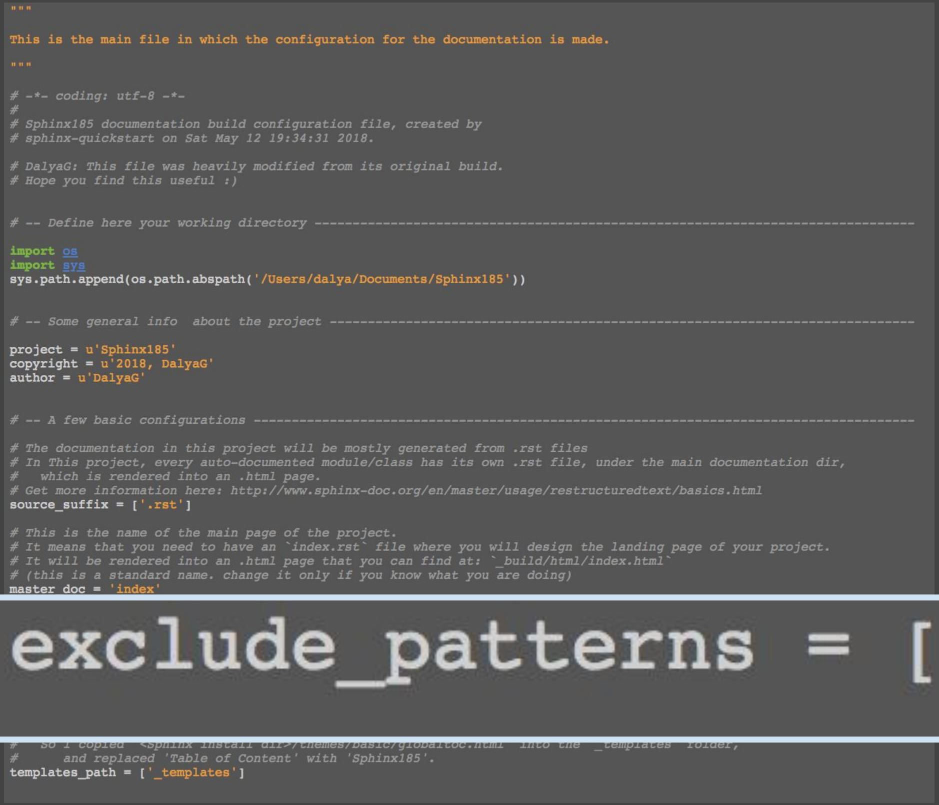

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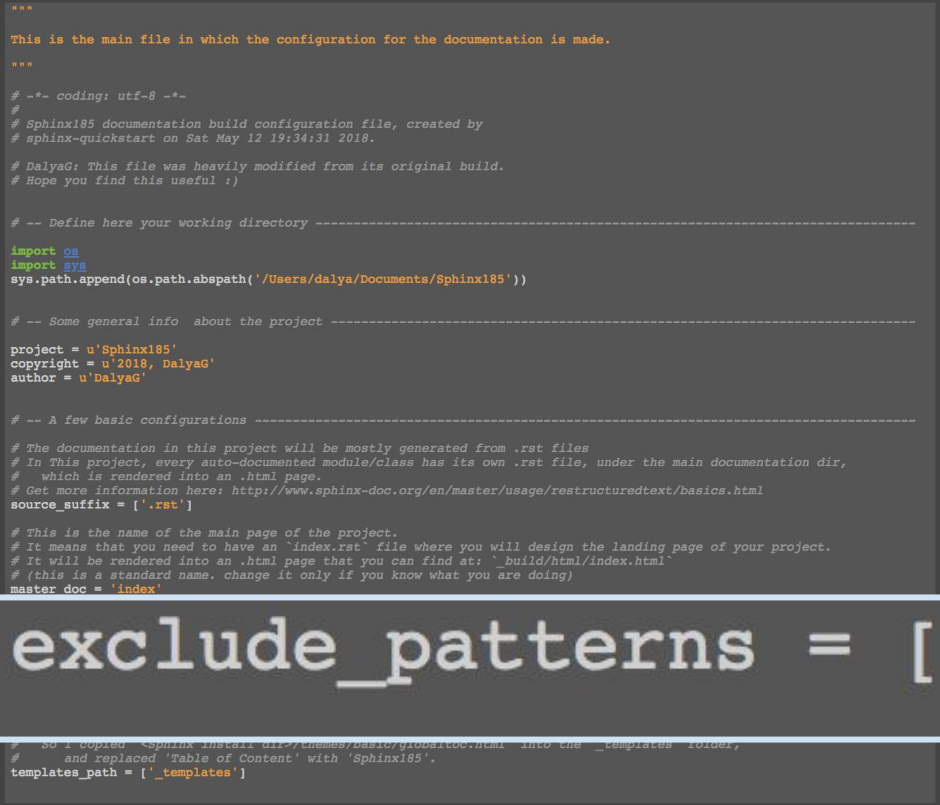

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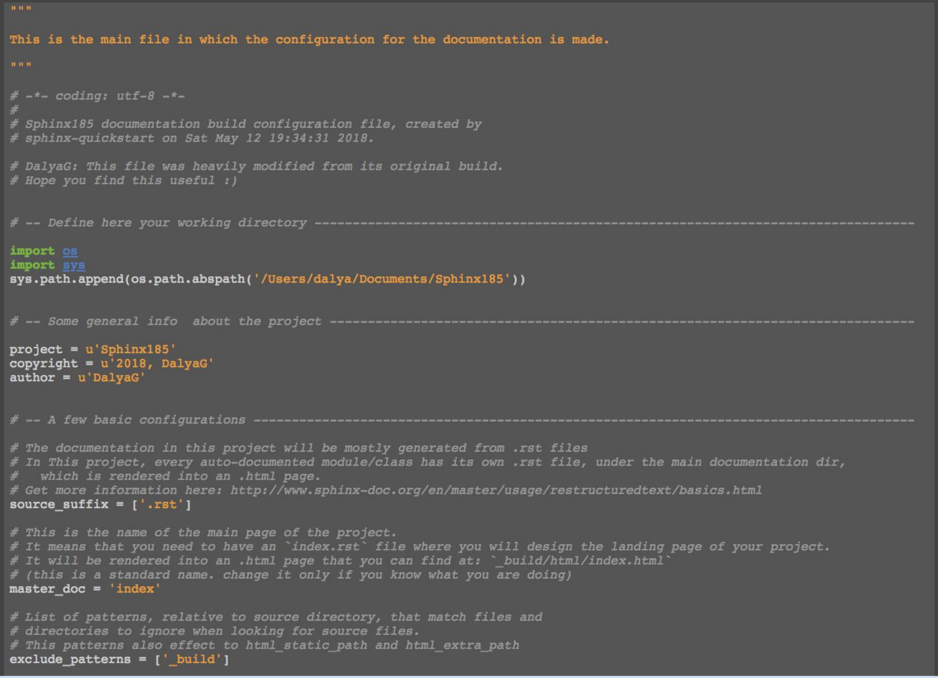

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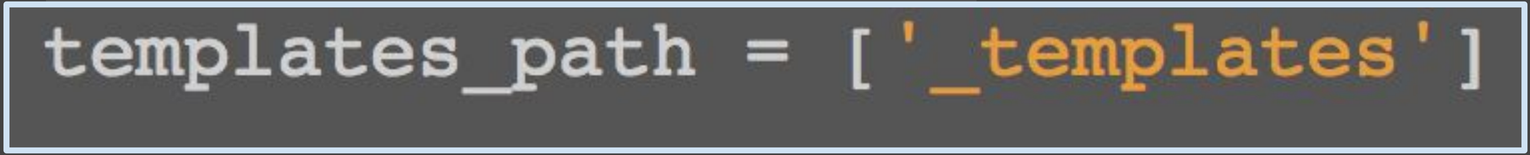

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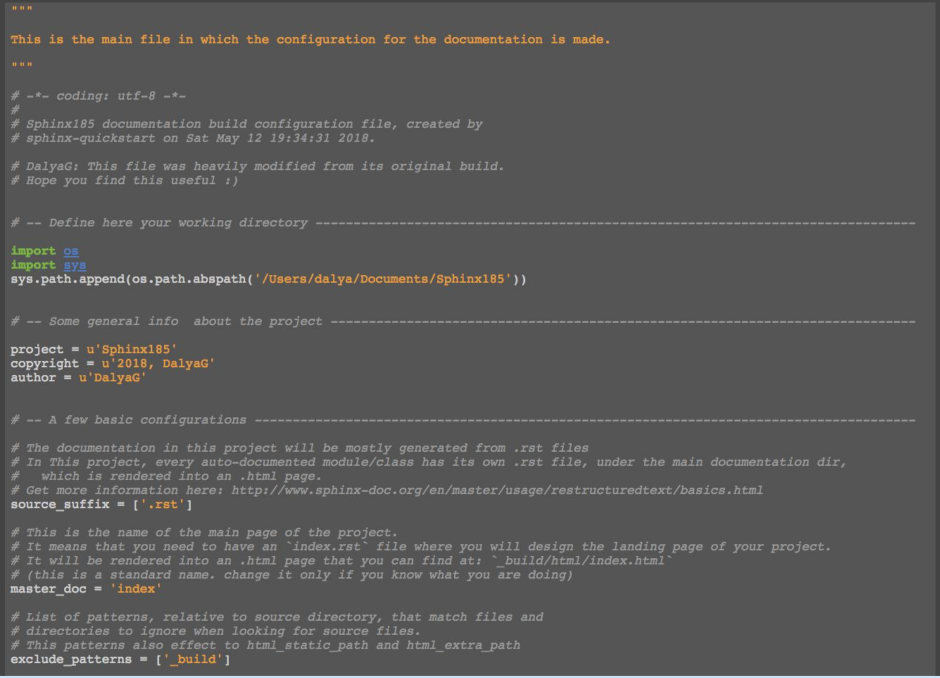
Part II - Main configuration file - conf.py



```
"""

This is the main file in which the configuration for the documentation is made.

"""

# -*- coding: utf-8 -*-
#
# Sphinx185 documentation build configuration file, created by
# sphinx-quickstart on Sat May 12 19:34:31 2018.

# DalyaG: This file was heavily modified from its original build.
# Hope you find this useful :)


# -- Define here your working directory ---------------------------------------------------------------------

import os
import sys
sys.path.append(os.path.abspath('/Users/dalya/Documents/Sphinx185'))


# -- Some general info  about the project -------------------------------------------------------------------

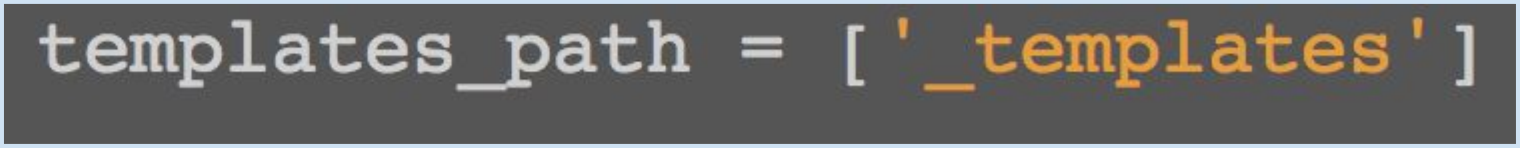
project = u'Sphinx185'
copyright = u'2018, DalyaG'
author = u'DalyaG'


# -- A few basic configurations -----------------------------------------------------------------------------

# The documentation in this project will be mostly generated from .rst files
# In This project, every auto-documented module/class has its own .rst file, under the main documentation dir,
#   which is rendered into an .html page.
# Get more information here: http://www.sphinx-doc.org/en/master/usage/restructuredtext/basics.html
source_suffix = ['.rst']

# This is the name of the main page of the project.
# It means that you need to have an `index.rst` file where you will design the landing page of your project.
# It will be rendered into an .html page that you can find at: `_build/html/index.html`
# (this is a standard name. change it only if you know what you are doing)
master_doc = 'index'

# List of patterns, relative to source directory, that match files and
# directories to ignore when looking for source files.
# This patterns also effect to html_static_path and html_extra_path
exclude_patterns = ['_build']
```

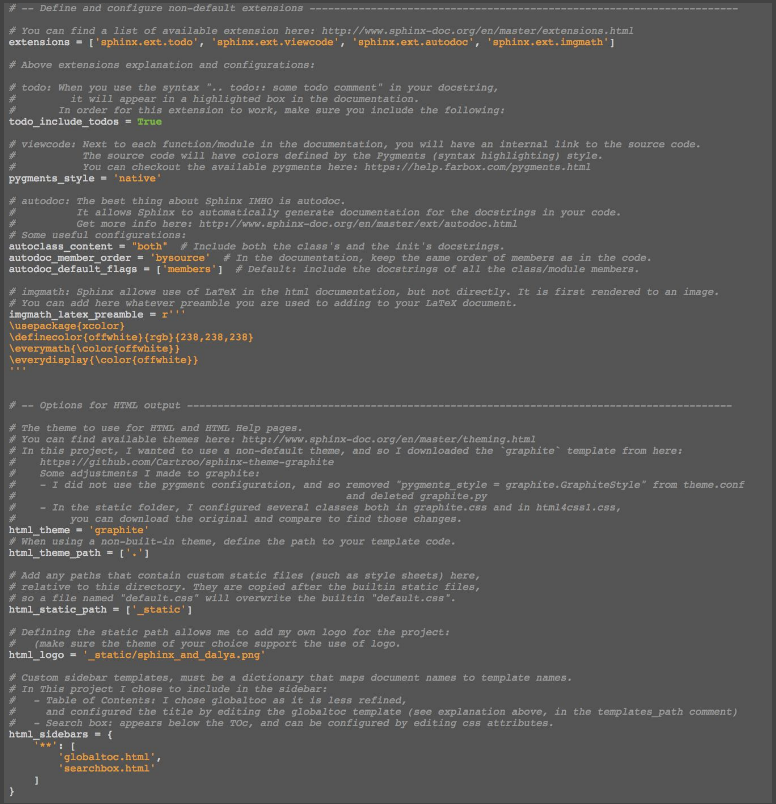


```
templates_path = ['_templates']
```

Templates are html exmaples for designing predifined elements

We will see:
a template for sidebar

Part II - Main configuration file - conf.py



```
# -- Define and configure non-default extensions ----------------------------------------------------------------------

# You can find a list of available extension here: http://www.sphinx-doc.org/en/master/extensions.html
extensions = ['sphinx.ext.todo', 'sphinx.ext.viewcode', 'sphinx.ext.autodoc', 'sphinx.ext.imgmath']

# Above extensions explanation and configurations:

# todo: When you use the syntax ".. todo:: some todo comment" in your docstring,
#         it will appear in a highlighted box in the documentation.
#       In order for this extension to work, make sure you include the following:
todo_include_todos = True

# viewcode: Next to each function/module in the documentation, you will have an internal link to the source code.
#           The source code will have colors defined by the Pygments (syntax highlighting) style.
#           You can checkout the available pygments here: https://help.farbox.com/pygments.html
pygments_style = 'native'

# autodoc: The best thing about Sphinx IMHO is autodoc.
#          It allows Sphinx to automatically generate documentation for the docstrings in your code.
#          Get more info here: http://www.sphinx-doc.org/en/master/ext/autodoc.html
# Some useful configurations:
autoclass_content = "both"  # Include both the class's and the init's docstrings.
autodoc_member_order = 'bysource'  # In the documentation, keep the same order of members as in the code.
autodoc_default_flags = ['members']  # Default: include the docstrings of all the class/module members.

# imgmath: Sphinx allows use of LaTeX in the html documentation, but not directly. It is first rendered to an image.
# You can add here whatever preamble you are used to adding to your LaTeX document.
imgmath_latex_preamble = r'''
\usepackage{xcolor}
\definecolor{offwhite}{rgb}{238,238,238}
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'''


# -- Options for HTML output ------------------------------------------------------------------------------------------

# The theme to use for HTML and HTML Help pages.
# You can find available themes here: http://www.sphinx-doc.org/en/master/theming.html
# In this project, I wanted to use a non-default theme, and so I downloaded the `graphite` template from here:
#    https://github.com/Cartroo/sphinx-theme-graphite
#    Some adjustments I made to graphite:
#    - I did not use the pygment configuration, and so removed "pygments_style = graphite.GraphiteStyle" from theme.conf
#                                                       and deleted graphite.py
#    - In the static folder, I configured several classes both in graphite.css and in html4css1.css,
#         you can download the original and compare to find those changes.
html_theme = 'graphite'
# When using a non-built-in theme, define the path to your template code.
html_theme_path = ['.']

# Add any paths that contain custom static files (such as style sheets) here,
# relative to this directory. They are copied after the builtin static files,
# so a file named "default.css" will overwrite the builtin "default.css".
html_static_path = ['_static']

# Defining the static path allows me to add my own logo for the project:
#   (make sure the theme of your choice support the use of logo.
html_logo = '_static/sphinx_and_dalya.png'

# Custom sidebar templates, must be a dictionary that maps document names to template names.
# In This project I chose to include in the sidebar:
#   - Table of Contents: I chose globaltoc as it is less refined,
#     and configured the title by editing the globaltoc template (see explanation above, in the templates_path comment)
#   - Search box: appears below the TOc, and can be configured by editing css attributes.
html_sidebars = {
    '**': [
        'globaltoc.html',
        'searchbox.html'
    ]
}
```

Part II - Main configuration file - conf.py

```
extensions = ['sphinx.ext.todo', 'sphinx.ext.viewcode', 'sphinx.ext.autodoc',
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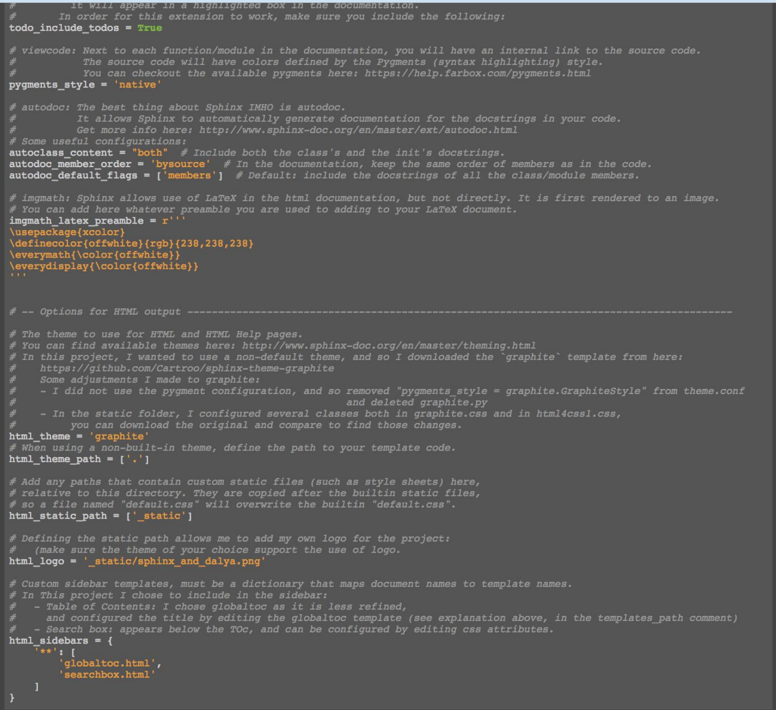
```



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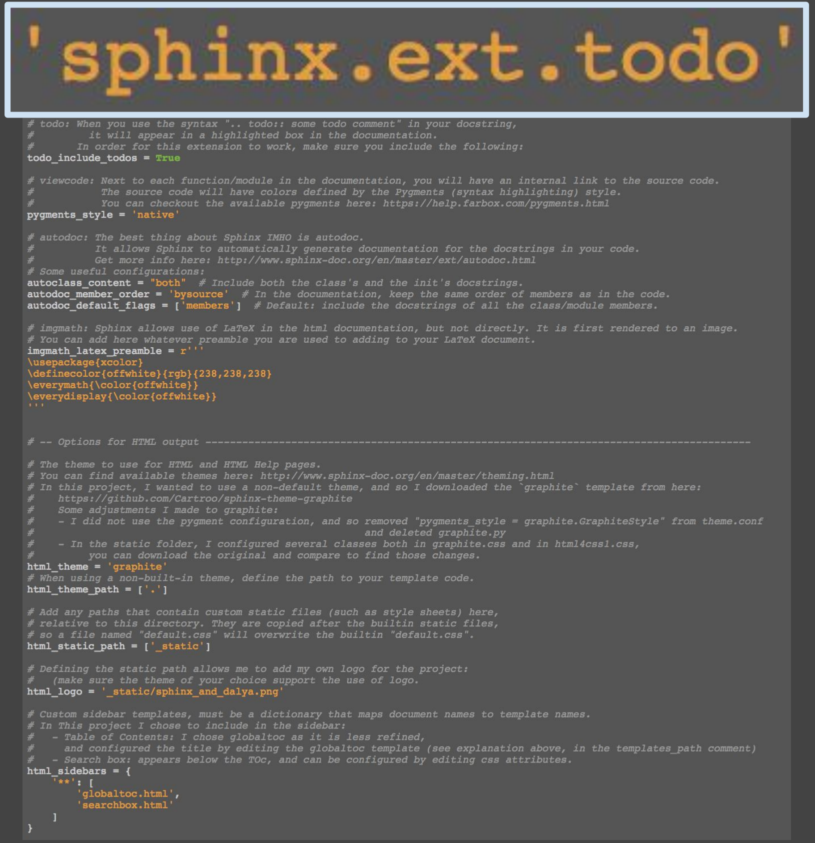
```

Let Sphinx know what extentions to use

Part II - Main configuration file - conf.py



'sphinx.ext.todo'

```
# todo: When you use the syntax ".. todo:: some todo comment" in your docstring,
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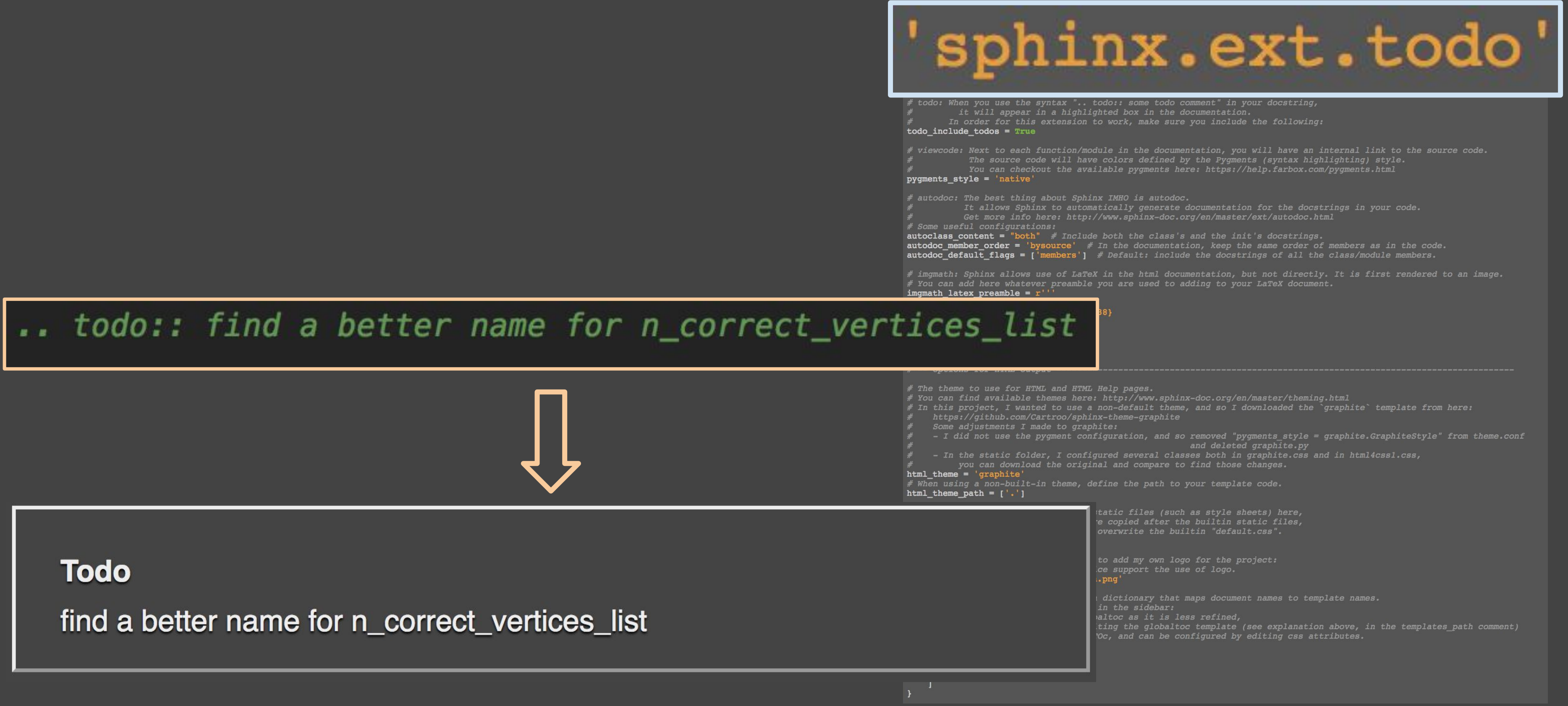
Part II - Main configuration file - conf.py



```
'sphinx.ext.todo'
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                                            38}

# ---------------------------------------------------------------------------------------------------------------

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                                             dictionary that maps document names to template names.
                                             in the sidebar:
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                                             Oc, and can be configured by editing css attributes.

    ]
}
```

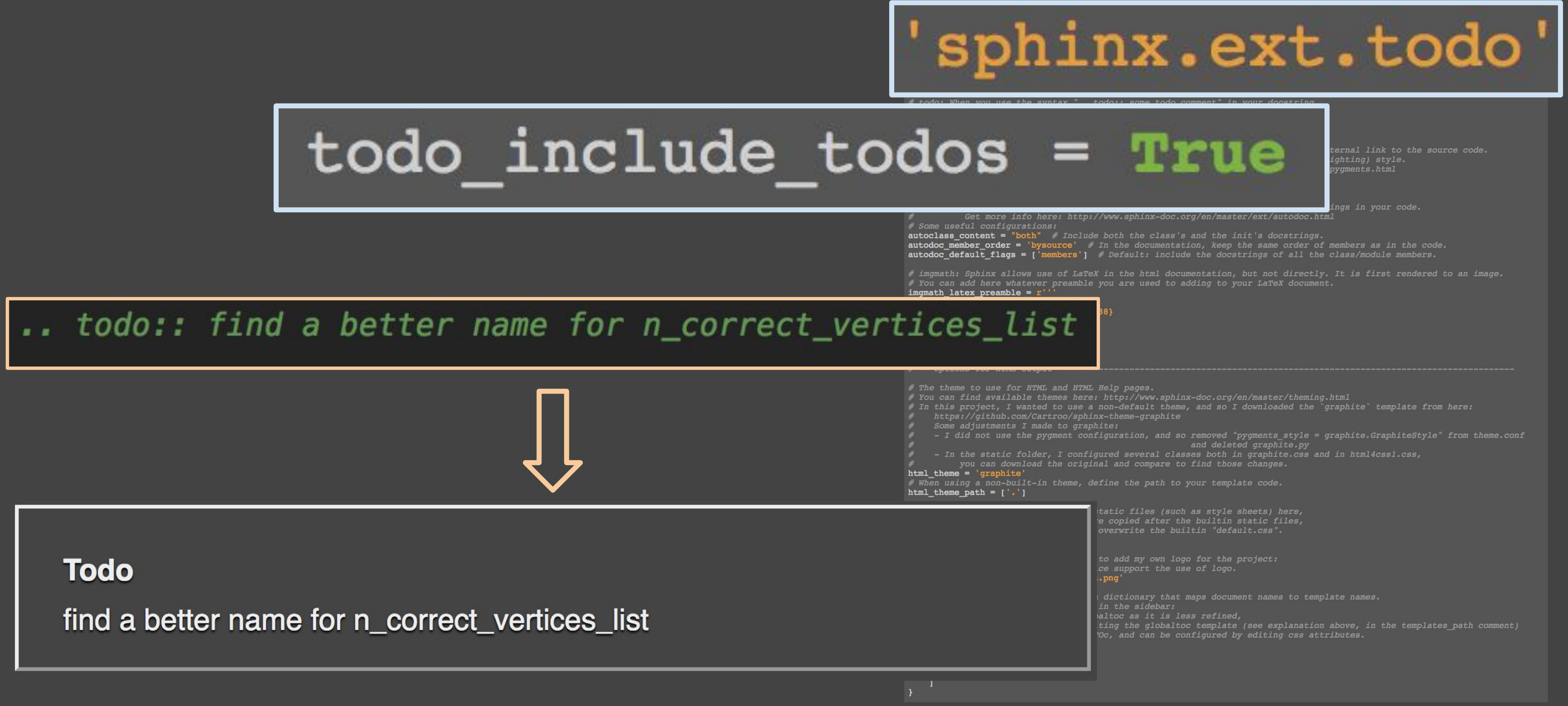
```
.. todo:: find a better name for n_correct_vertices_list
```

⇩

Todo

find a better name for n_correct_vertices_list

Part II - Main configuration file - conf.py



```
'sphinx.ext.todo'
```

```
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```
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```

Todo

find a better name for n_correct_vertices_list

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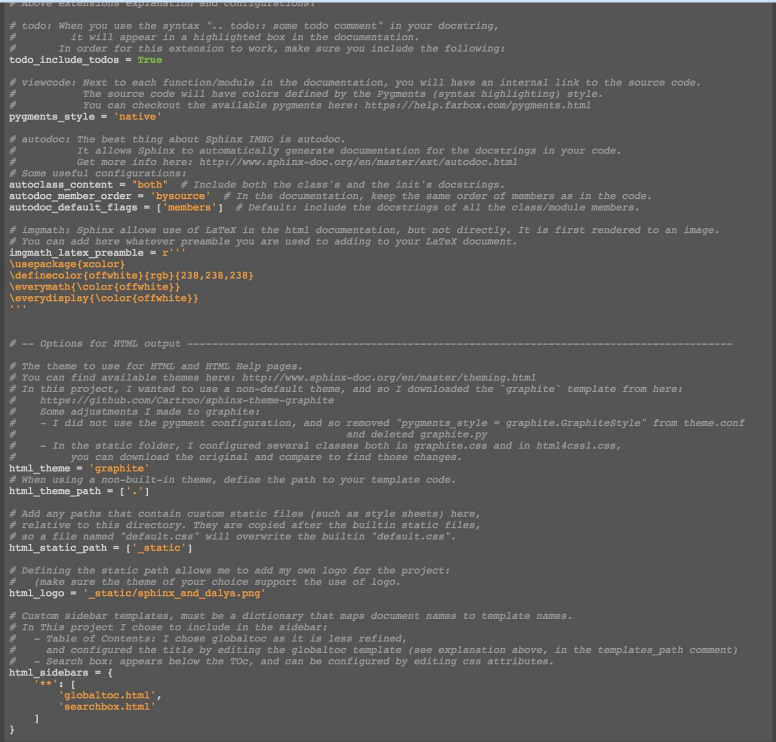
Part II - Main configuration file - conf.py

'sphinx.ext.viewcode'



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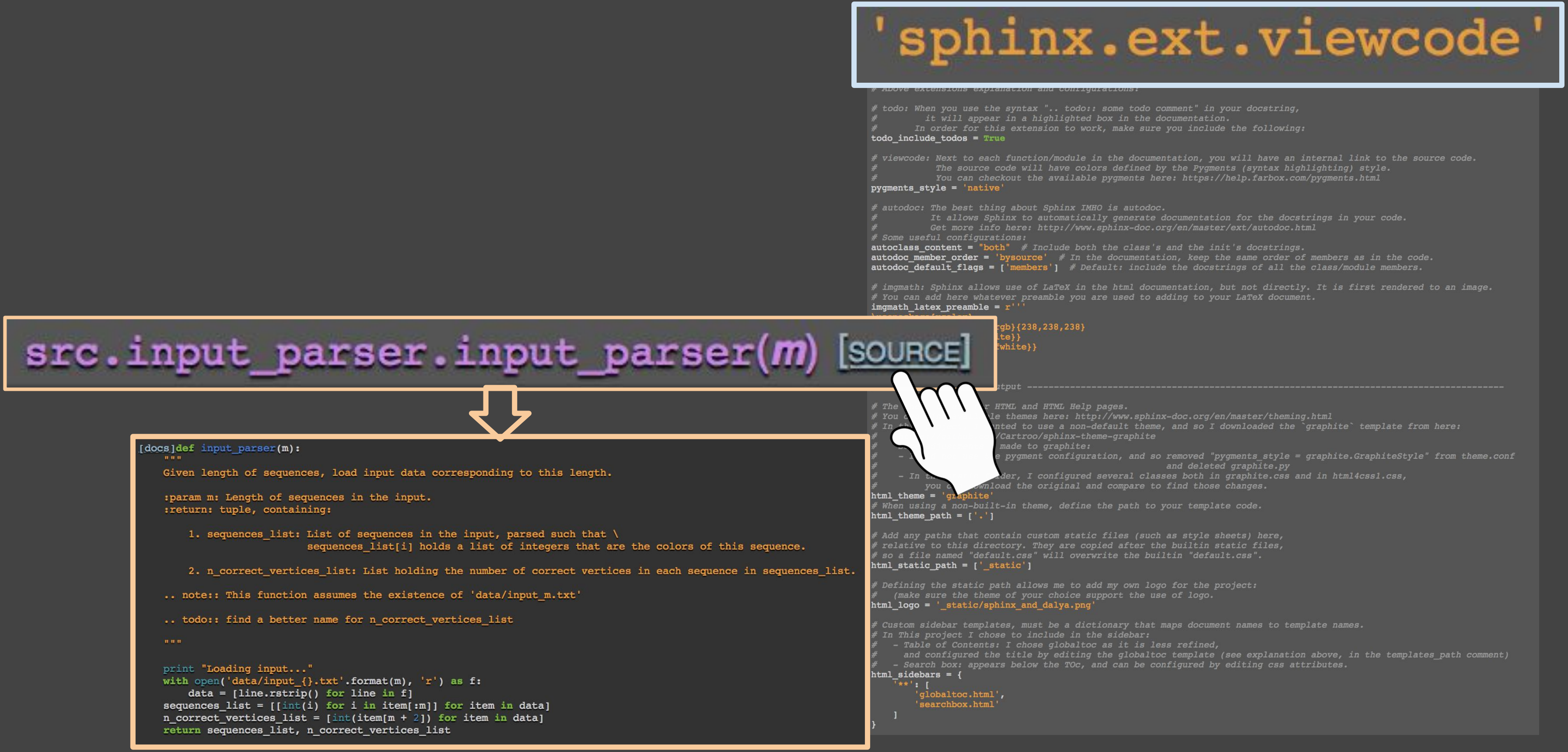

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                  rgb}{238,238,238}
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                  fwhite}}


                  tput ----------------------------------------------------------------------------------------

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```

```
src.input_parser.input_parser(m) [SOURCE]
```

```
[docs]def input_parser(m):
    """
    Given length of sequences, load input data corresponding to this length.

    :param m: Length of sequences in the input.
    :return: tuple, containing:

        1. sequences_list: List of sequences in the input, parsed such that \
                           sequences_list[i] holds a list of integers that are the colors of this sequence.

        2. n_correct_vertices_list: List holding the number of correct vertices in each sequence in sequences_list.

    .. note:: This function assumes the existence of 'data/input_m.txt'

    .. todo:: find a better name for n_correct_vertices_list

    """

    print "Loading input..."
    with open('data/input_{}.txt'.format(m), 'r') as f:
        data = [line.rstrip() for line in f]
    sequences_list = [[int(i) for i in item[:m]] for item in data]
    n_correct_vertices_list = [int(item[m + 2]) for item in data]
    return sequences_list, n_correct_vertices_list
```

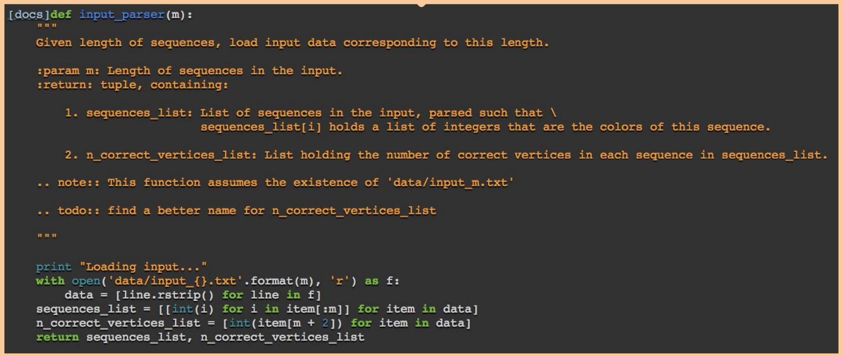
Part II - Main configuration file - conf.py

'sphinx.ext.viewcode'

pygments_style = 'native'

https://help.farbox.com/pygments.html

src.input_parser.input_parser(*m*) [SOURCE]



```
[docs]def input_parser(m):
    """
    Given length of sequences, load input data corresponding to this length.

    :param m: Length of sequences in the input.
    :return: tuple, containing:

        1. sequences_list: List of sequences in the input, parsed such that \
                           sequences_list[i] holds a list of integers that are the colors of this sequence.

        2. n_correct_vertices_list: List holding the number of correct vertices in each sequence in sequences_list.

    .. note:: This function assumes the existence of 'data/input_m.txt'

    .. todo:: find a better name for n_correct_vertices_list

    """

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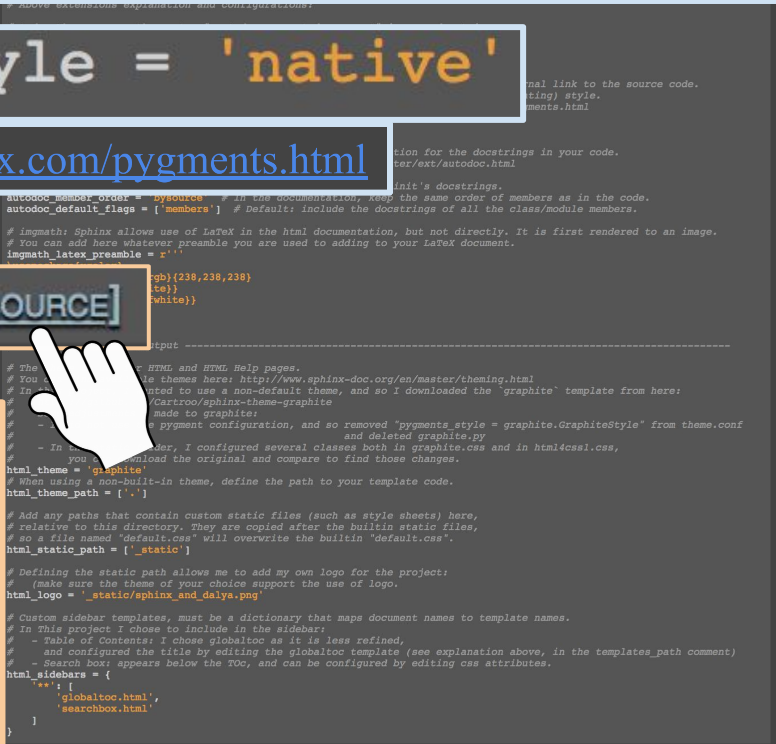

```
# Above extensions explanation and configurations:

                                                  rnal link to the source code.
                                                  ting) style.
                                                  ments.html

                                                  tion for the docstrings in your code.
                                                  ter/ext/autodoc.html

                                                  init's docstrings.
autodoc_member_order = 'bysource'  # In the documentation, keep the same order of members as in the code.
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# You can add here whatever preamble you are used to adding to your LaTeX document.
imgmath_latex_preamble = r'''

           rgb}{238,238,238}
           ite}}
           fwhite}}


           tput ------------------------------------------------------------------------------------

# The          r HTML and HTML Help pages.
# You c        le themes here: http://www.sphinx-doc.org/en/master/theming.html
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#              /Cartroo/sphinx-theme-graphite
#              made to graphite:
#   - I        e pygment configuration, and so removed "pygments_style = graphite.GraphiteStyle" from theme.conf
#                                                 and deleted graphite.py
#   - In t     der, I configured several classes both in graphite.css and in html4css1.css,
#         you c  wnload the original and compare to find those changes.
html_theme = 'graphite'
# When using a non-built-in theme, define the path to your template code.
html_theme_path = ['.']

# Add any paths that contain custom static files (such as style sheets) here,
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html_static_path = ['_static']

# Defining the static path allows me to add my own logo for the project:
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html_sidebars = {
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        'globaltoc.html',
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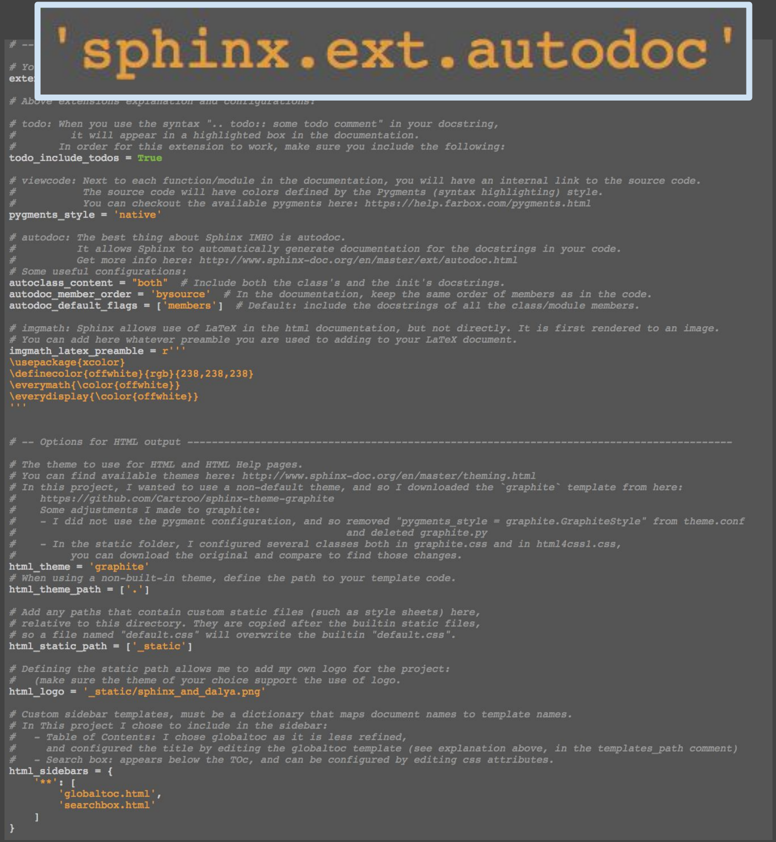
    ]
}
```

Part II - Main configuration file - conf.py

'sphinx.ext.autodoc'



```
# --

# Yo
exte

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pygments_style = 'native'

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    ]
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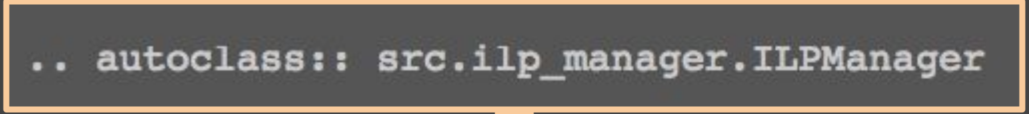
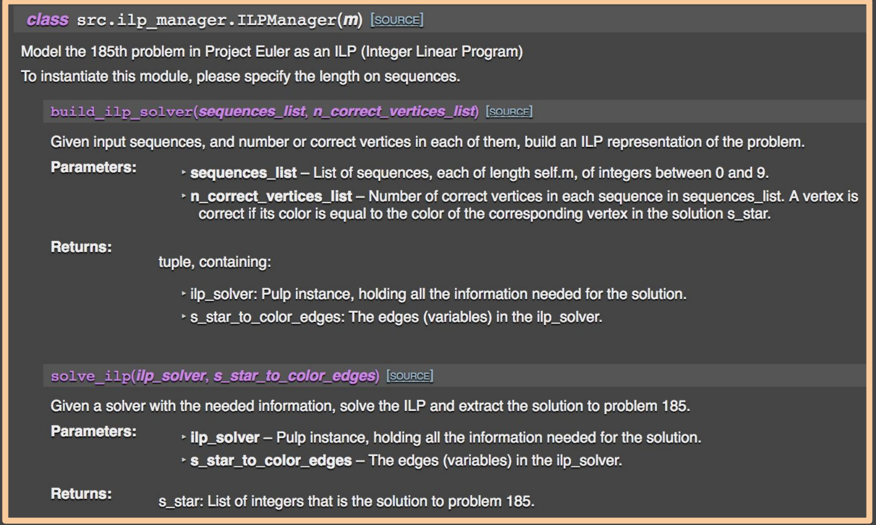
```

Part II - Main configuration file - conf.py



```
.. autoclass:: src.ilp_manager.ILPManager
```



class src.ilp_manager.ILPManager(*m*) [SOURCE]

Model the 185th problem in Project Euler as an ILP (Integer Linear Program)

To instantiate this module, please specify the length on sequences.

build_ilp_solver(*sequences_list*, *n_correct_vertices_list*) [SOURCE]

Given input sequences, and number or correct vertices in each of them, build an ILP representation of the problem.

Parameters:

- **sequences_list** – List of sequences, each of length self.m, of integers between 0 and 9.
- **n_correct_vertices_list** – Number of correct vertices in each sequence in sequences_list. A vertex is correct if its color is equal to the color of the corresponding vertex in the solution s_star.

Returns:

tuple, containing:

- ilp_solver: Pulp instance, holding all the information needed for the solution.
- s_star_to_color_edges: The edges (variables) in the ilp_solver.

solve_ilp(*ilp_solver*, *s_star_to_color_edges*) [SOURCE]

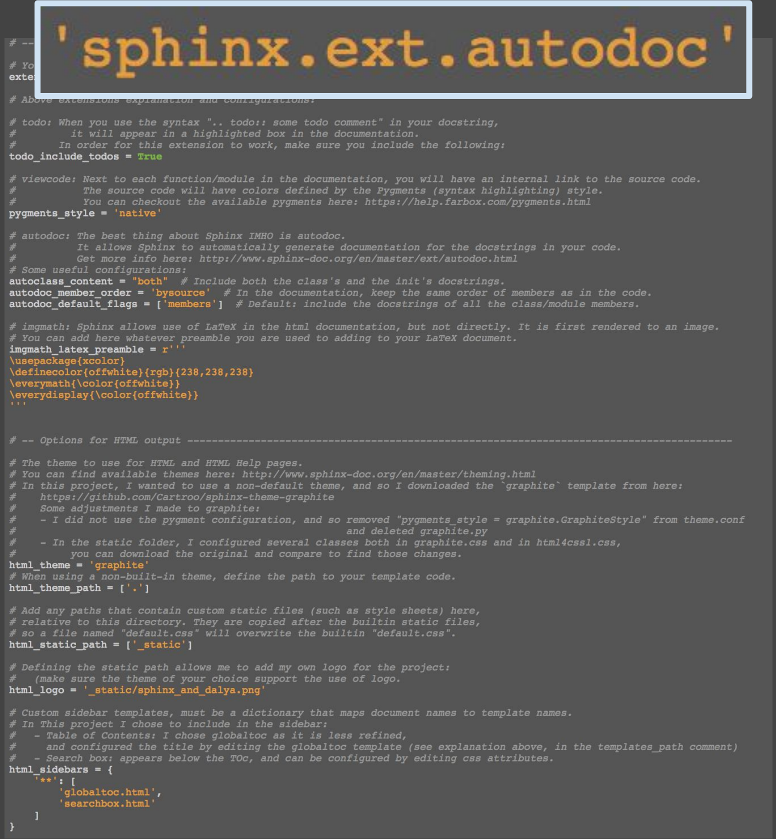
Given a solver with the needed information, solve the ILP and extract the solution to problem 185.

Parameters:

- **ilp_solver** – Pulp instance, holding all the information needed for the solution.
- **s_star_to_color_edges** – The edges (variables) in the ilp_solver.

Returns:

s_star: List of integers that is the solution to problem 185.



```
'sphinx.ext.autodoc'
```

```
# --
# Yo
exte

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Part II - Main configuration file - conf.py

'sphinx.ext.autodoc'

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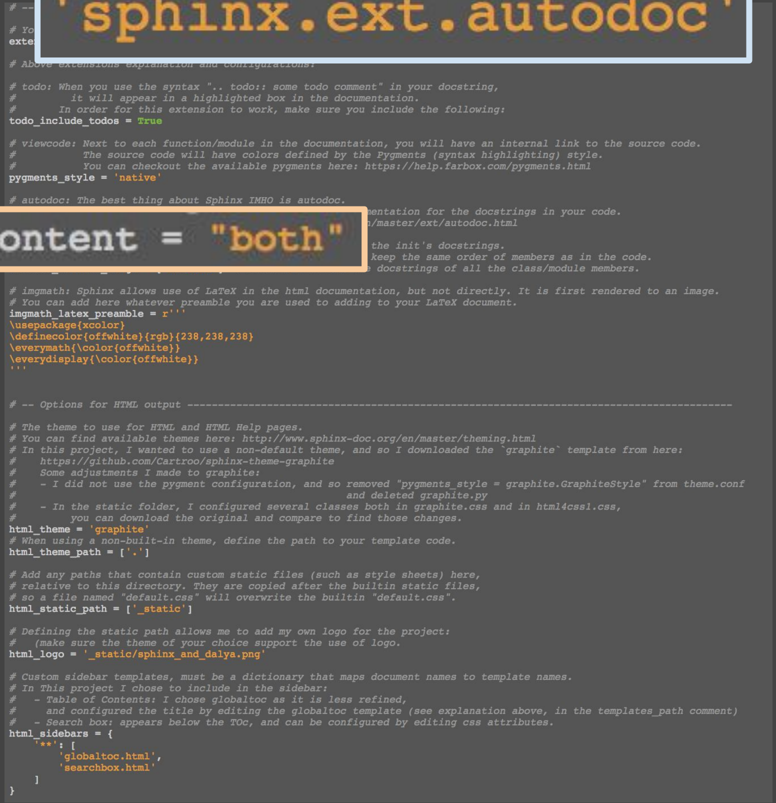

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                                                     n/master/ext/autodoc.html

                                                      the init's docstrings.
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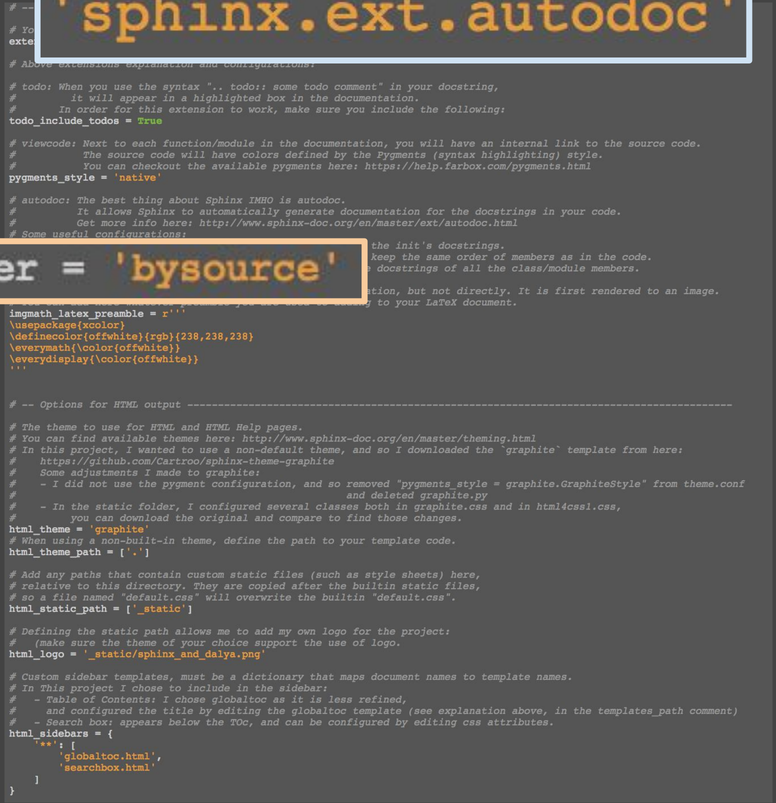
    ]
}
```

Include both the class's and the init's docstrings

Part II - Main configuration file - conf.py

```
'sphinx.ext.autodoc'
```



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# Yo
exte

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```

```
autodoc_member_order = 'bysource'
```

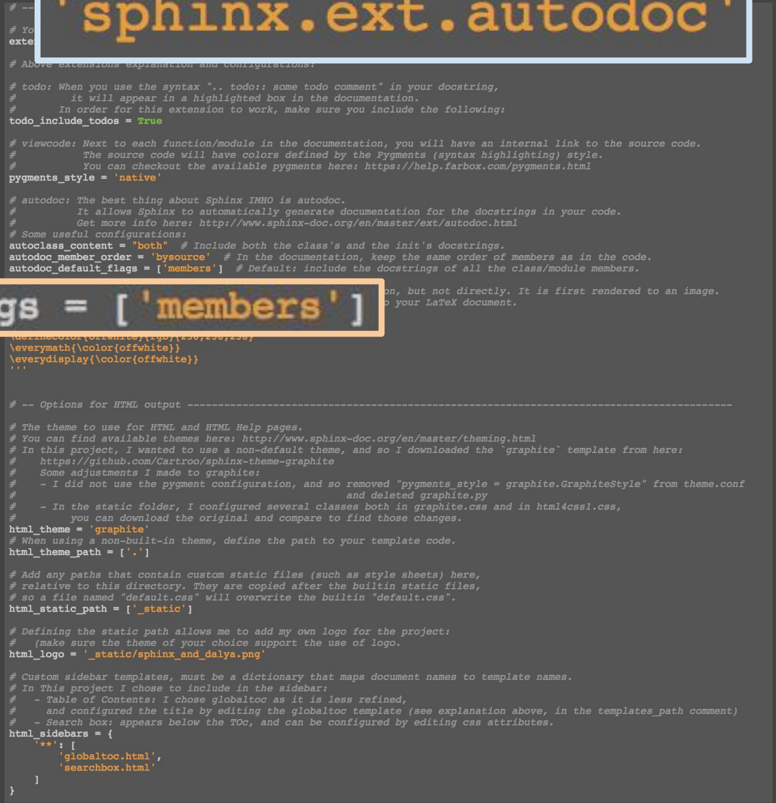
In the documentation, keep the same order of members as in the code

Part II - Main configuration file - conf.py

'sphinx.ext.autodoc'

autodoc_default_flags = ['members']

Default: include the docstrings of all the class/module members



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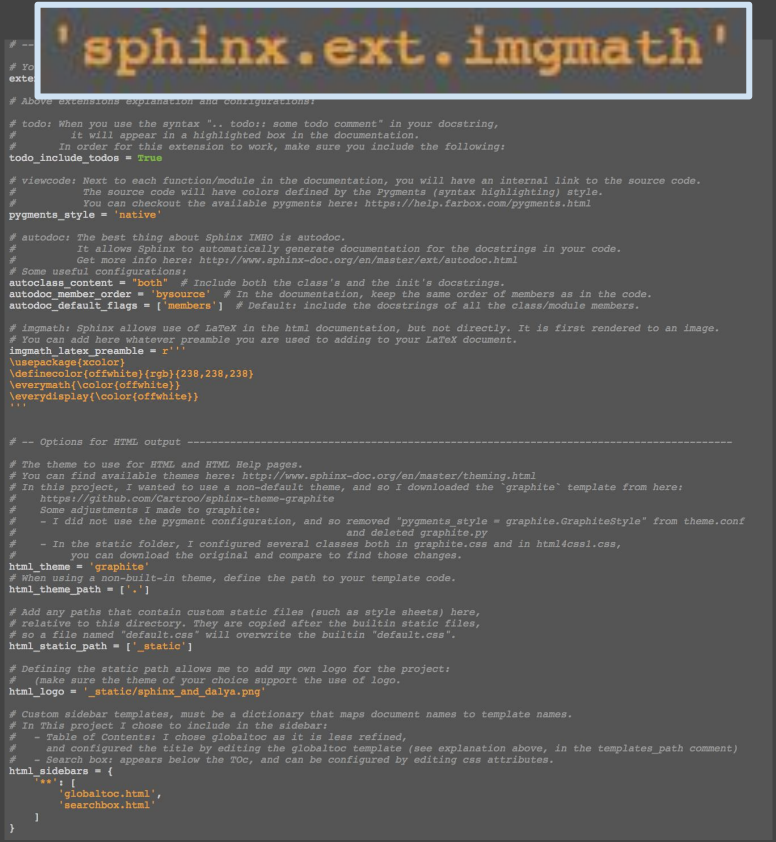
Part II - Main configuration file - conf.py



'sphinx.ext.imgmath'

```
# --

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exte

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# You can find available themes here: http://www.sphinx-doc.org/en/master/theming.html
# In this project, I wanted to use a non-default theme, and so I downloaded the `graphite` template from here:
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#                                                      and deleted graphite.py
#    - In the static folder, I configured several classes both in graphite.css and in html4css1.css,
#         you can download the original and compare to find those changes.
html_theme = 'graphite'
# When using a non-built-in theme, define the path to your template code.
html_theme_path = ['.']

# Add any paths that contain custom static files (such as style sheets) here,
# relative to this directory. They are copied after the builtin static files,
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html_static_path = ['_static']

# Defining the static path allows me to add my own logo for the project:
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html_logo = '_static/sphinx_and_dalya.png'

# Custom sidebar templates, must be a dictionary that maps document names to template names.
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html_sidebars = {
    '**': [
        'globaltoc.html',
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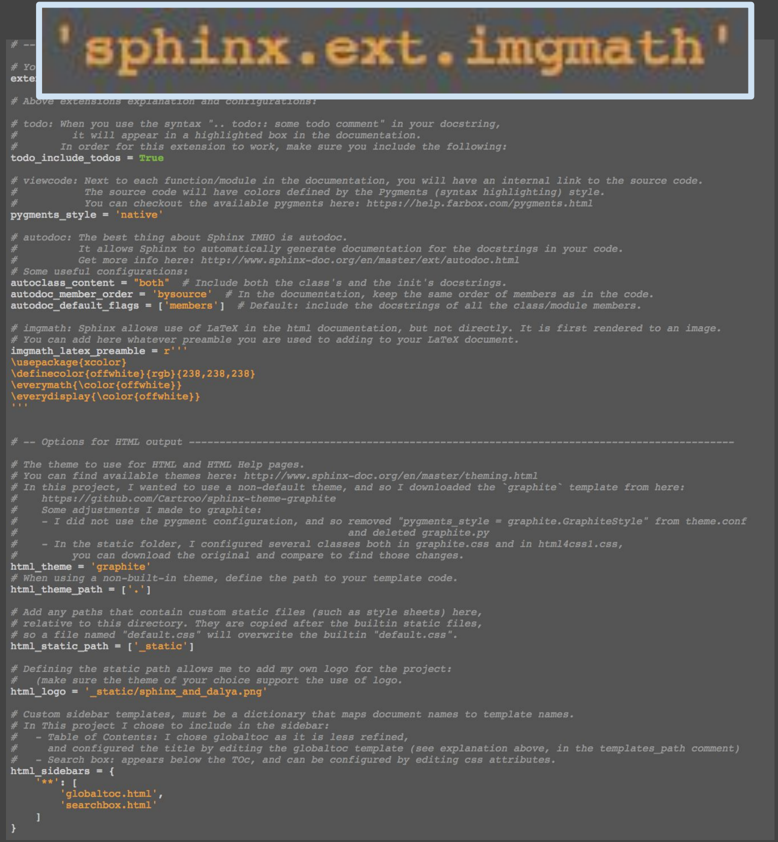
```

Part II - Main configuration file - conf.py



'sphinx.ext.imgmath'

```
# --
# Yo
exte

# Above extensions explanation and configurations:

# todo: When you use the syntax ".. todo:: some todo comment" in your docstring,
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todo_include_todos = True

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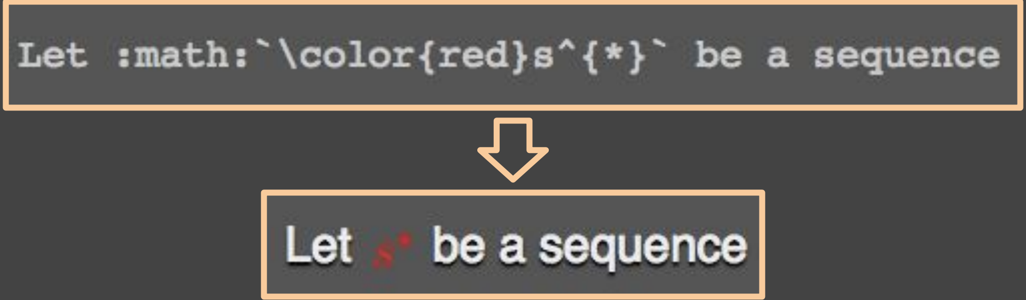

```
Let :math:`\color{red}s^{*}` be a sequence
```

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Part II - Main configuration file - conf.py

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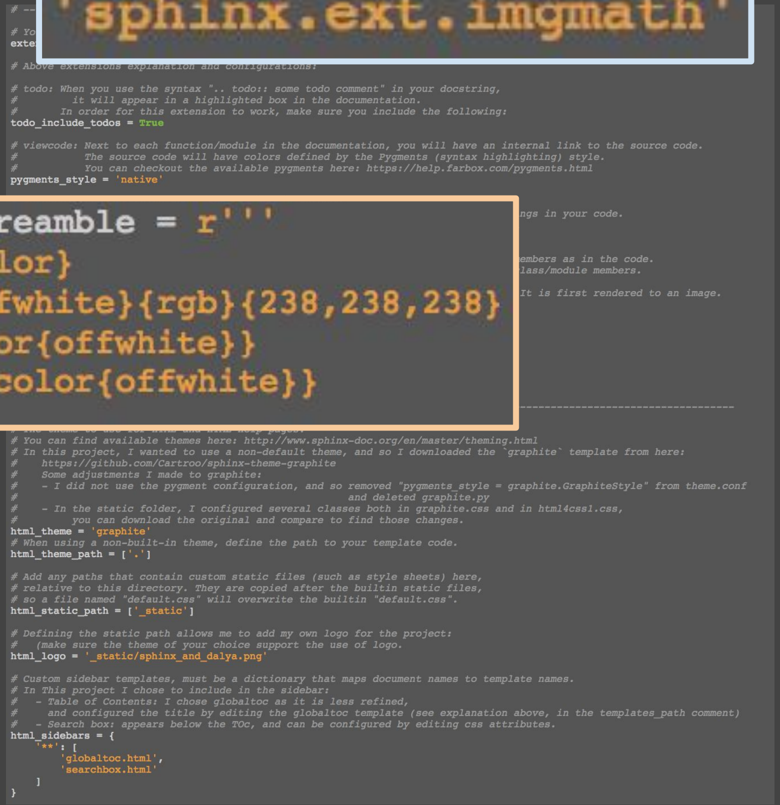

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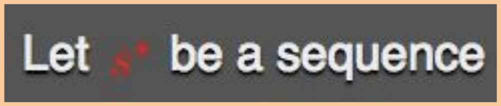
⇩



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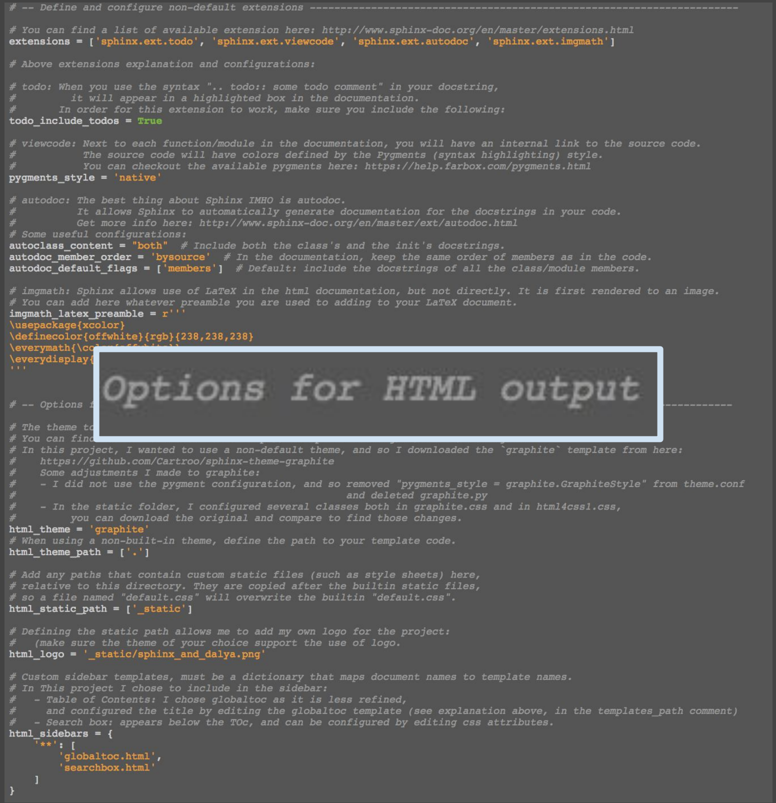
Part II - Main configuration file - conf.py



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# -- Options f                                                                                          ------------

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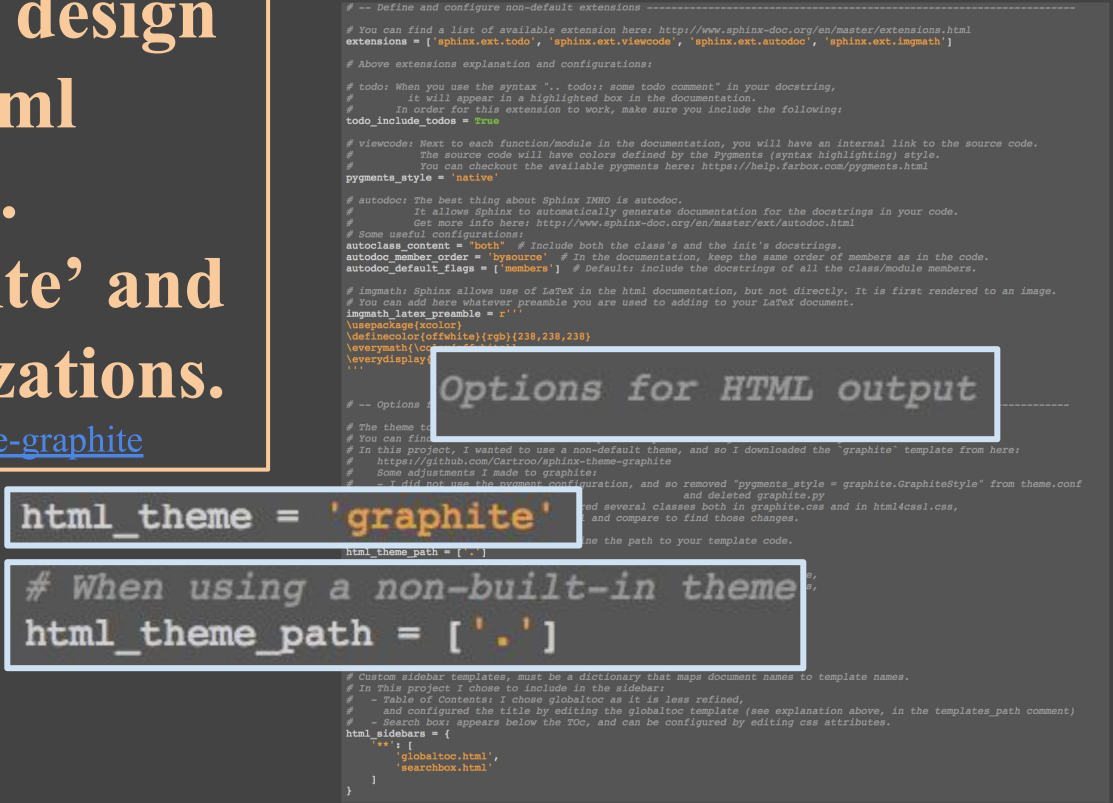
Options for HTML output

Part II - Main configuration file - conf.py

The themes holds the design for the output html documentation.
I downloaded ‘graphite’ and made some personalizations.

https://github.com/Cartroo/sphinx-theme-graphite



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                                                                                          s,





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```
Options for HTML output
```

```
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```
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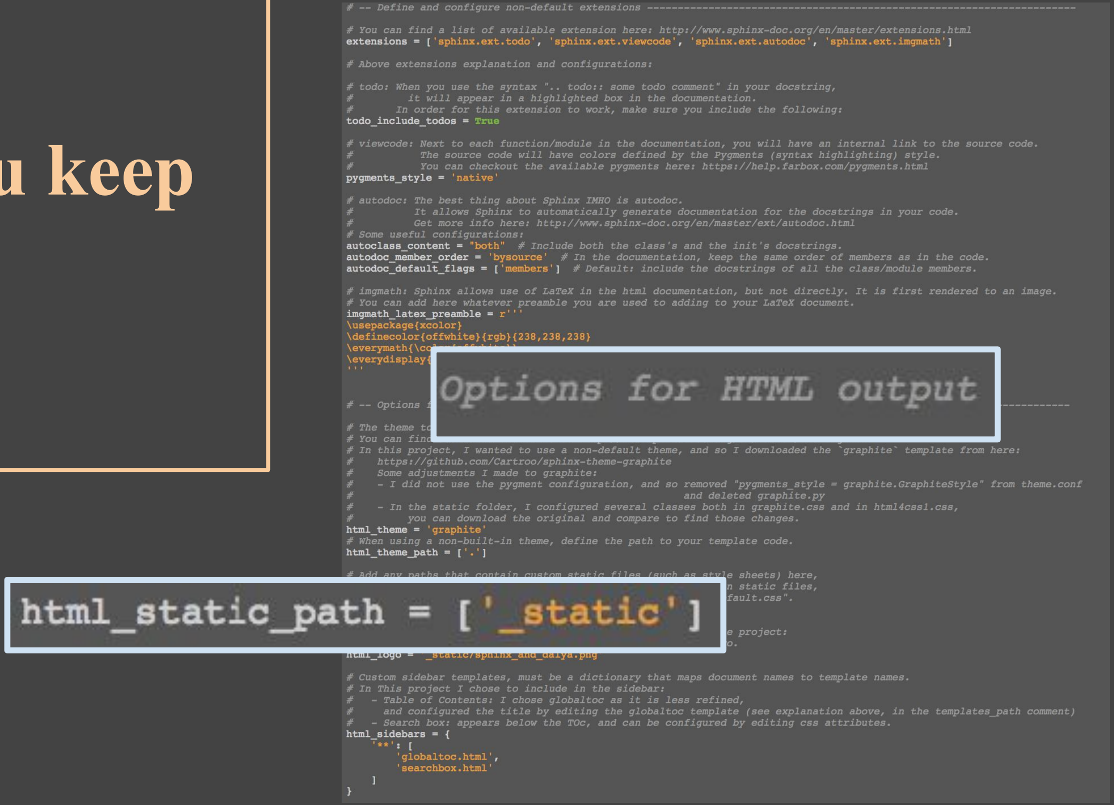
Part II - Main configuration file - conf.py

The folder where you keep images etc.



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Options for HTML output
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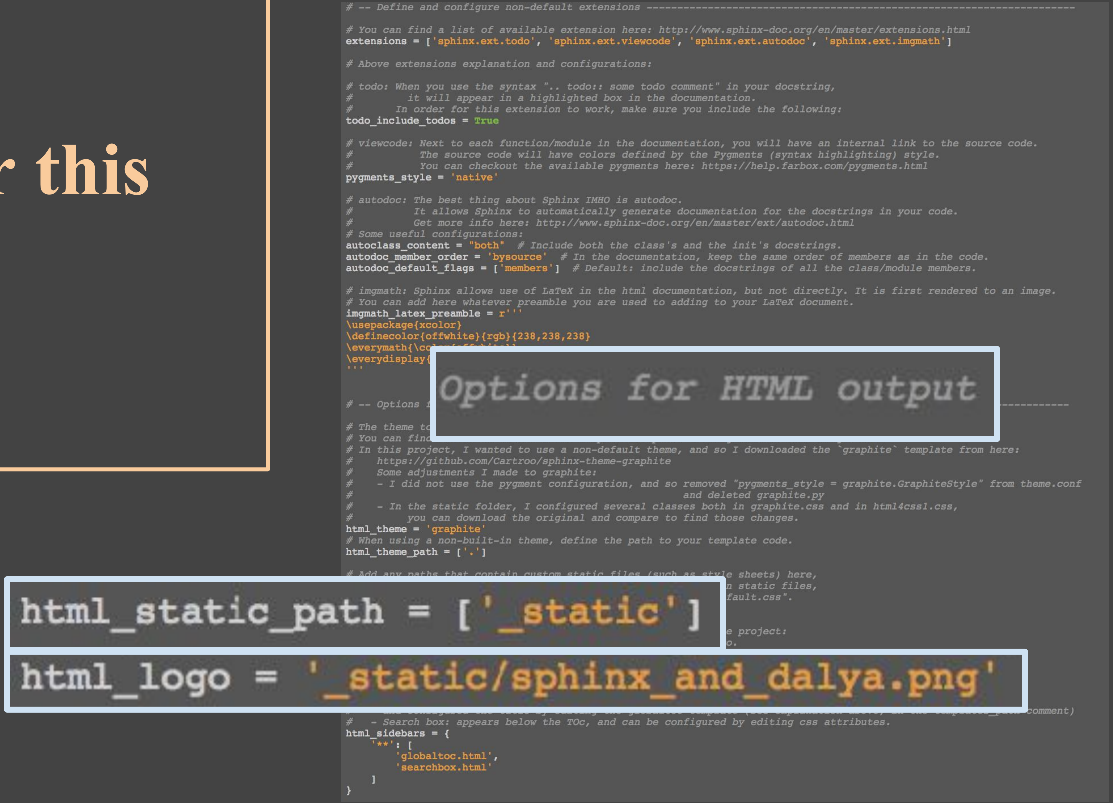
Part II - Main configuration file - conf.py

Such as the logo for this project



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Options for HTML output

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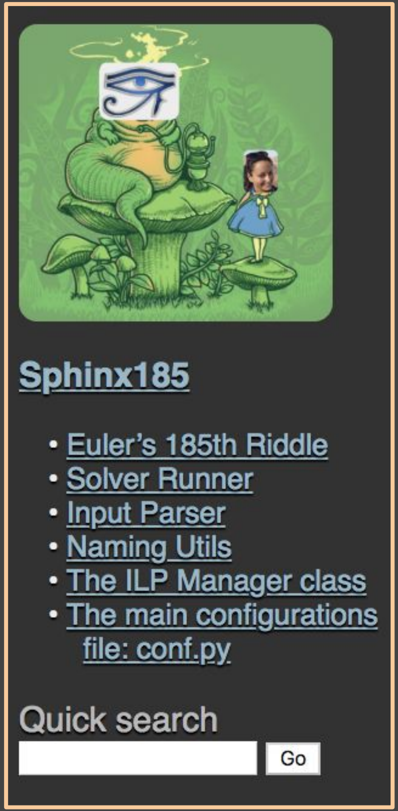
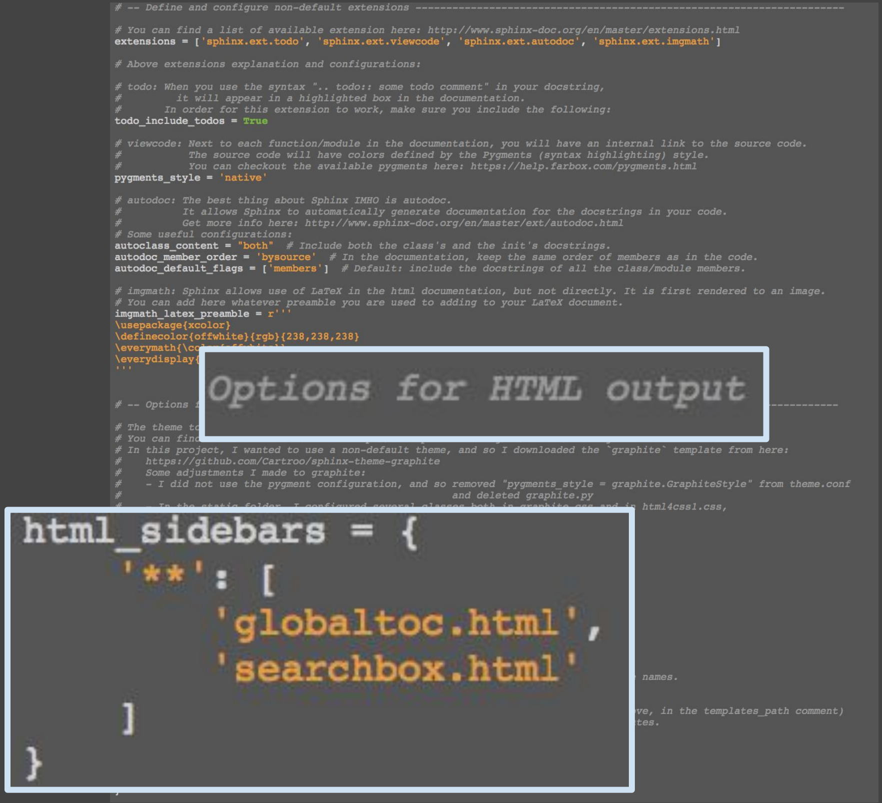
Part II - Main configuration file - conf.py



Sphinx185

- Euler’s 185th Riddle
- Solver Runner
- Input Parser
- Naming Utils
- The ILP Manager class
- The main configurations file: conf.py

Quick search



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#    - In the static folder, I configured several classes both in graphite.css and in html4css1.css,
```

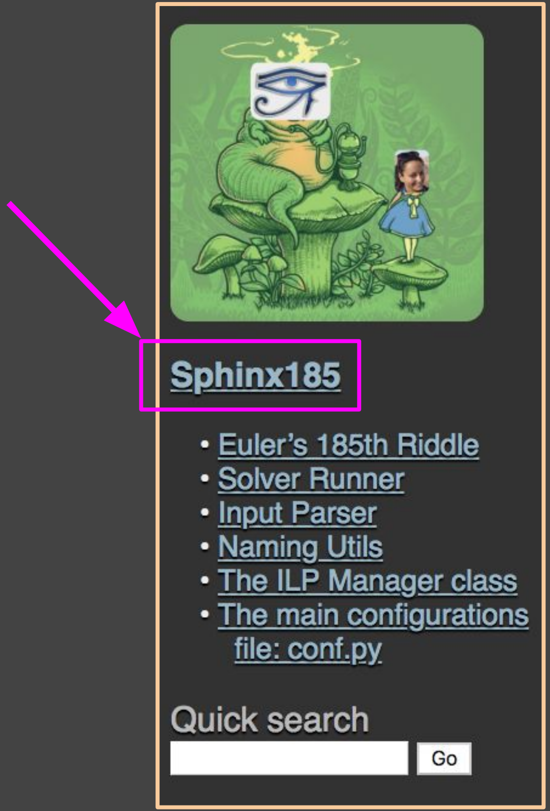
```
Options for HTML output
```

```
html_sidebars = {
    '**': [
        'globaltoc.html',
        'searchbox.html'
    ]
}
```

```
names.

ve, in the templates_path comment)
tes.
```

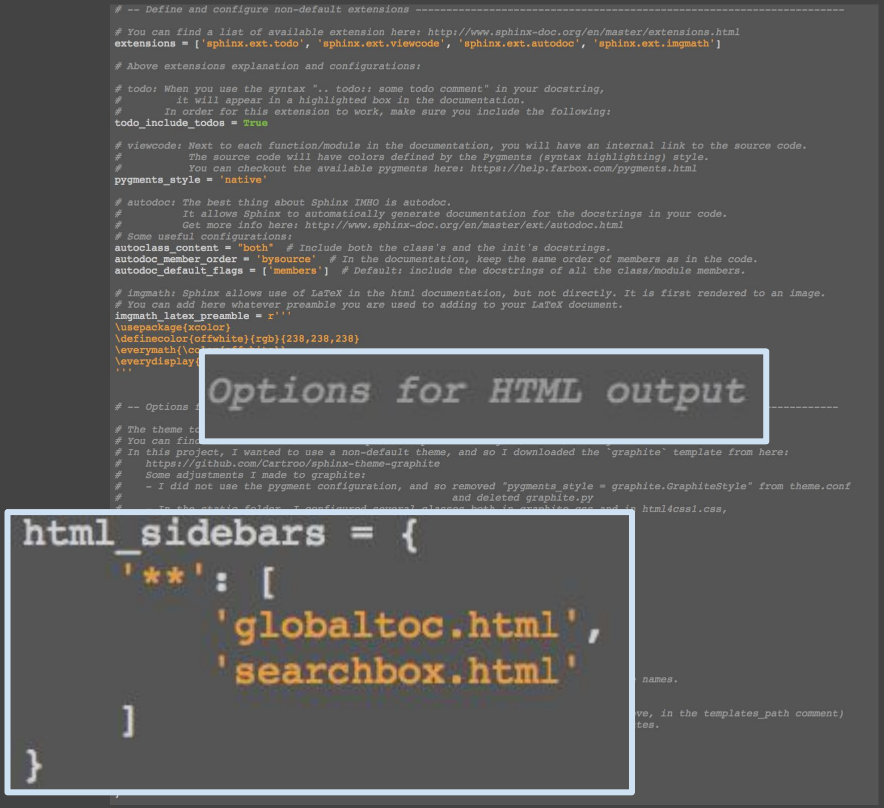
Part II - Main configuration file - conf.py



Sphinx185

- Euler's 185th Riddle
- Solver Runner
- Input Parser
- Naming Utils
- The ILP Manager class
- The main configurations file: conf.py

Quick search



```
# -- Define and configure non-default extensions ------------------------------------------------------------------

# You can find a list of available extension here: http://www.sphinx-doc.org/en/master/extensions.html
extensions = ['sphinx.ext.todo', 'sphinx.ext.viewcode', 'sphinx.ext.autodoc', 'sphinx.ext.imgmath']

# Above extensions explanation and configurations:

# todo: When you use the syntax ".. todo:: some todo comment" in your docstring,
#          it will appear in a highlighted box in the documentation.
#        In order for this extension to work, make sure you include the following:
todo_include_todos = True

# viewcode: Next to each function/module in the documentation, you will have an internal link to the source code.
#            The source code will have colors defined by the Pygments (syntax highlighting) style.
#            You can checkout the available pygments here: https://help.farbox.com/pygments.html
pygments_style = 'native'

# autodoc: The best thing about Sphinx IMHO is autodoc.
#           It allows Sphinx to automatically generate documentation for the docstrings in your code.
#           Get more info here: http://www.sphinx-doc.org/en/master/ext/autodoc.html
# Some useful configurations:
autoclass_content = "both"  # Include both the class's and the init's docstrings.
autodoc_member_order = 'bysource'  # In the documentation, keep the same order of members as in the code.
autodoc_default_flags = ['members']  # Default: include the docstrings of all the class/module members.

# imgmath: Sphinx allows use of LaTeX in the html documentation, but not directly. It is first rendered to an image.
# You can add here whatever preamble you are used to adding to your LaTeX document.
imgmath_latex_preamble = r'''
\usepackage{xcolor}
\definecolor{offwhite}{rgb}{238,238,238}
\everymath{\co
\everydisplay{
'''


# -- Options f                                                                                        ------------

# The theme to
# You can find
# In this project, I wanted to use a non-default theme, and so I downloaded the `graphite` template from here:
#    https://github.com/Cartroo/sphinx-theme-graphite
#    Some adjustments I made to graphite:
#    - I did not use the pygment configuration, and so removed "pygments_style = graphite.GraphiteStyle" from theme.conf
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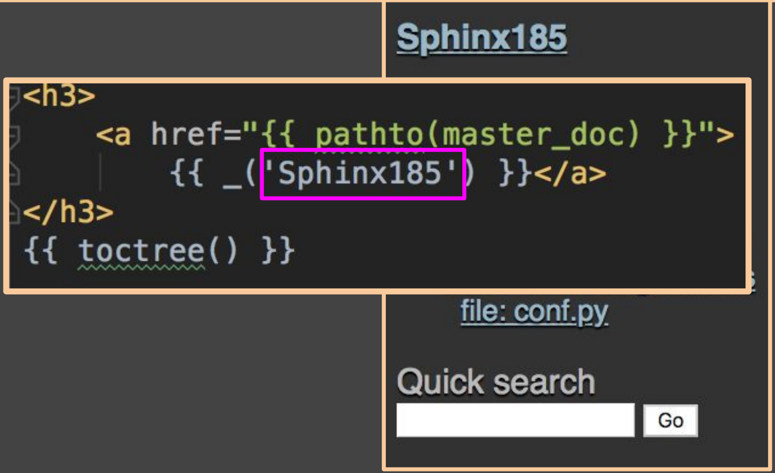
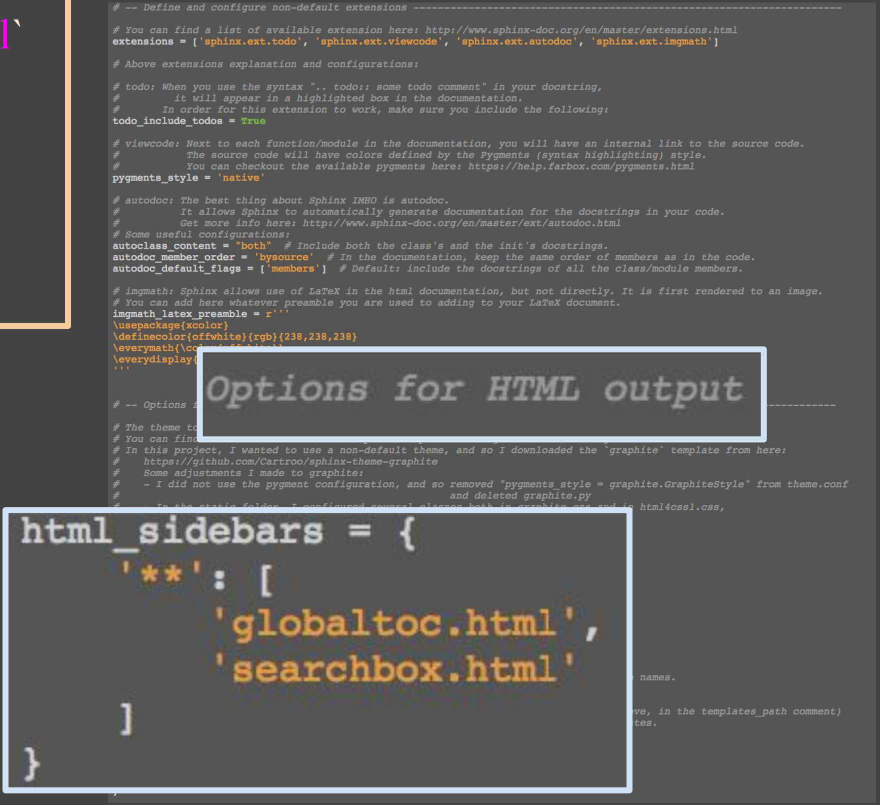
```

Part II - Main configuration file - conf.py

copy `<Sphinx install dir>/themes/basic/globaltoc.html`
in to the `_templates` folder in my project,
and replaced 'Table of Content' with 'Sphinx185':



```
<h3>
    <a href="{{ pathto(master_doc) }}">
        {{ _('Sphinx185') }}</a>
</h3>
{{ toctree() }}
```



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