Project 2: Stacks and Queues

1.1 Information

Topics: Stacks, Queues, LinkedList, Templates

Turn in: All source files (.cpp and .hpp).

Starter files: Download on GitHub or D2L.

1.1.1 About

```
Project 2 - Stacks and Queues/
├── main.cpp ...  Contains main()
├── AirTravelSimulator.hpp ...  Contains main program
│                               code
├── AirTravelSimulator.cpp
├── Airplane.hpp ...  The virtual Airplane
├── Airplane.cpp
├── Airport.hpp ...  The virtual Airport
├── Airport.cpp
├── Traveller.hpp ...  Traveller structure
├── TravelManager.hpp ...  Contains all travellers
├── States.hpp ...  Different program states
├── names.txt ...  Data file with traveller names
├── DataStructures/ ...  Data structures are stored here
│   ├── LinkedList.hpp
│   ├── Queue.hpp
│   └── Stack.hpp
└── docs/html/index.html ...  The documentation files
```

This program does not have any unit tests associated with it.

1.1.2 Documentation

For this program, documentation has been auto-generated using *doxygen*. The documentation is also available as comments in the source code, so you can read the function notes in either place.

To access the documentation outside of the code, go to the **docs** folder, then the **html** folder.
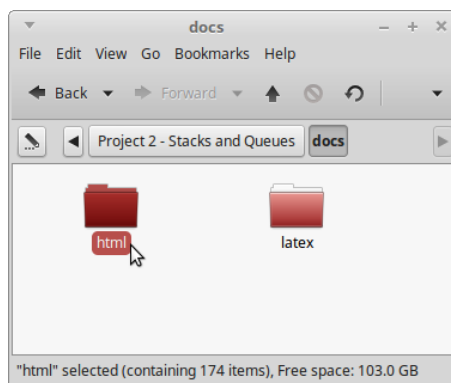

Figure 1.1: Inside the docs folder

Then, open **index.html**. You can click on the **Classes** tab to view a list of all classes in the program, and clicking on a class will take you to its documentation page, which includes the descriptions of functionality you will need to implement. **All of the functions' documentation is in the doxygen page.**

1.1.3 Adding on to Airport and Airplane

You will need to add the following members to the Airport and Airplane classes:

- Airport: Add a Stack of Traveller pointers as a member variable

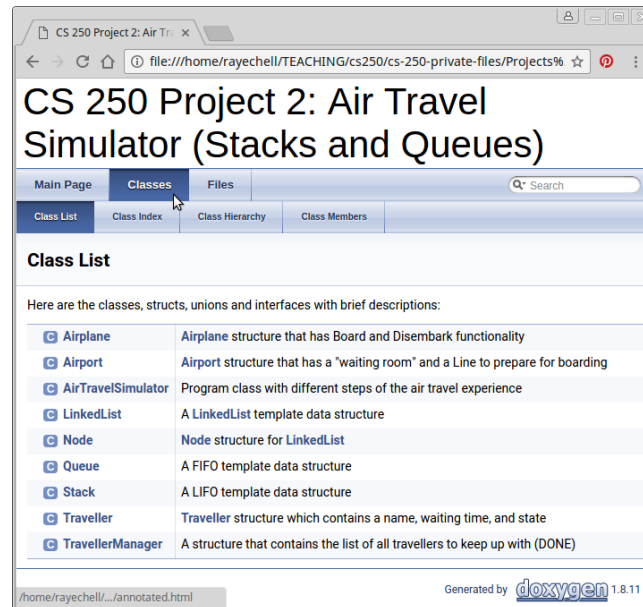- Airplane: Add a Queue of Traveller pointers as a member variable
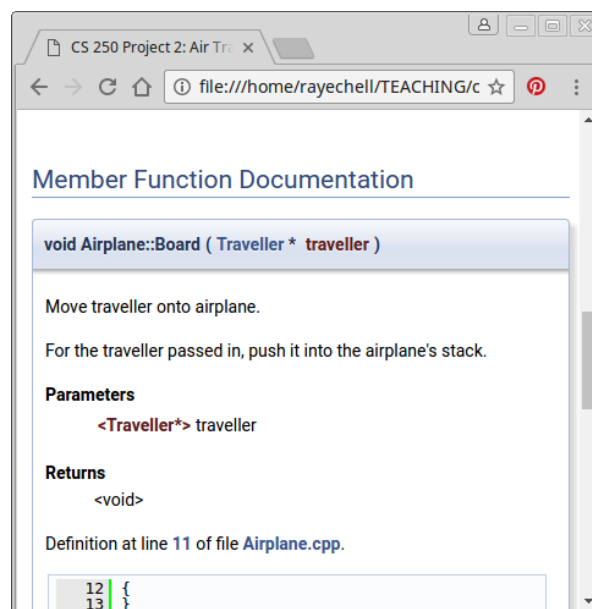
Figure 1.2: The list of classes in the documentation

Figure 1.3: A function's documentation

Grading Breakdown

Features

Breakdown		
Score		
Item	**Task weight**	
Queue constructor	5.00%	
Queue::Push	5.00%	
Queue::Pop	5.00%	
Queue::Front	5.00%	
Stack constructor	5.00%	
Stack::Push	5.00%	
Stack::Pop	5.00%	
Stack::Top	5.00%	
Airplane::Board	2.00%	
Airplane::Disembark	5.00%	
Airplane::IsEmpty	1.00%	
Airport::LineUp	2.00%	
Airport::NextInLine	5.00%	
Airport::IsEmpty	1.00%	
Airport::WaitingCount	1.00%	
Airport::SetMaxCapacity	1.00%	
Airport::GetMaxCapacity	1.00%	
AirTravelSimulator constructor	1.00%	
AirTravelSimulator::Run	10.00%	
AirTravelSimulator::LineUp	10.00%	
AirTravelSimulator::Board	10.00%	
AirTravelSimulator::Disembark	10.00%	

Penalties

Penalties	
Item	**Max penalty**
Syntax errors (doesn't build)	-50.00%
Logic errors	-10.00%
Run-time errors	-10.00%
Memory errors (leaks, bad memory access)	-10.00%
Ugly code (bad indentation, no whitespacing)	-5.00%
Ugly UI (no whitespacing, no prompts, hard to use)	-5.00%
Not citing code from other sources	-100.00%
Not all tests run (Tests crash)	-10.00%