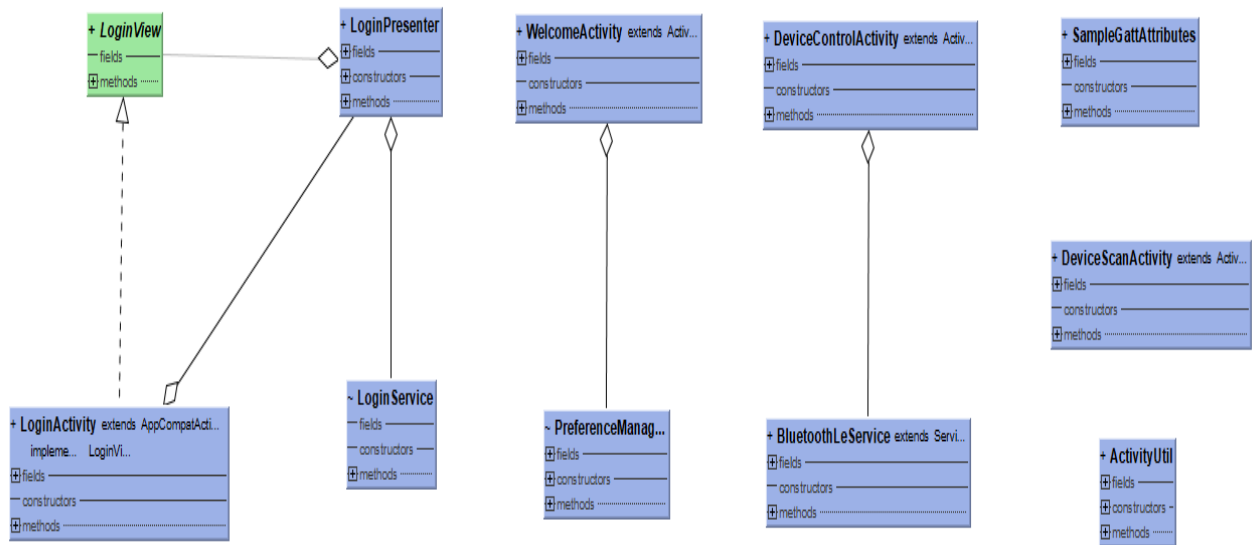


1. System design



2. Coding conventions

Variables, Methods and attributes

- Short and descriptive
- Begin with lower case and follow camel-casing convention
- Constant variables use uppercase letters

Accessors and Mutators

- Should have descriptive names
- Should have get/set prefix followed by the attribute that is being accessed

Indentation and layout

- Nested blocks should be indented
- One program statement per line
- White spaces should be used to make the code easy on the eye

Curly Brackets

- Opening curly bracket should not start on a new line
- Closing curly bracket should be on a new line
- Closing bracket and method name should have the same indentation

Exceptions

- Use relevant exceptions
- Each try block should be followed by a catch block

Imports

- Optimize imports

- Do not import using 'import.*'

Naming conventions

1. Classes
 - a. Classes follow a pascal case naming convention
 - b. Class names are descriptive and short
 - c. Test classes will follow a pascal case naming convention
2. Folders
 - a. Names of folders will be separated using an underscore character.
 - b. Names of folders will start with an uppercase letter and the first character after the underscore will also start with an underscore character
3. Variables
 - a. Constant variables are all uppercase letters
 - b. Variables begin with lowercase letter and the follow camel-casing convention
 - c. Final variables will be uppercase characters and the words will be separated with the use of an underscore character
 - d. Variables will be descriptive and the use of meaningless names will not be used

Commenting practices

- One line comments are made using double slash e.g. //
- Multiline comments are made using slash and asterisk character e.g. /*
- Multiline comments are open using a slash followed by a asterisk and the closed using an asterisk followed by a slash
- Comments will be used to provide descriptions to the reader about the classes and methods
- Every file will have a file header with the version number, author, purpose, description and the module it belongs to.
- Figure 1 is an example of how comments will be used in classes

```
/*  
  
    Author:  
    Description:  
    Version number:  
    Module:  
  
*/
```

Figure 1: Example of multiline comment

File structure

- All android application files should have a “.java”, “.png”, and “.xml” file extension
- All Arduino files should have a “.ino” file extension
- All documentation should have a “.pdf” file extension
- Figure 2 illustrates the expanded file structure of our repository
- Figure 3 illustrates the collapsed GitHub file structure of our repository

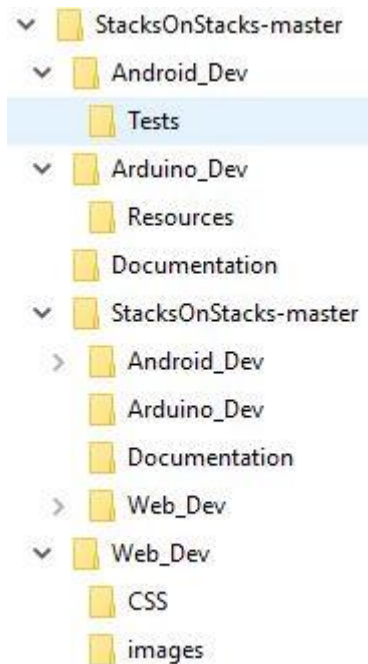


Figure 2: Expanded File Structure

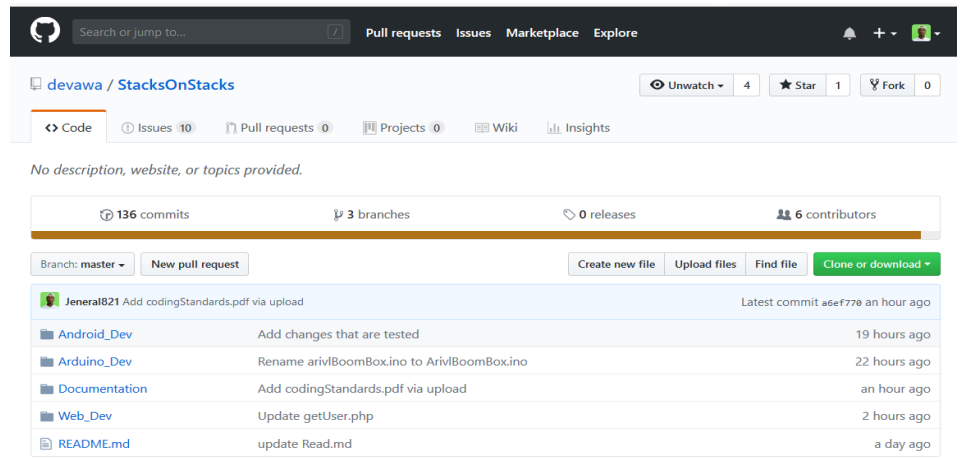


Figure 3: GitHub File Structure

Code Review process

- Android Studio provides a code scanning tool called lint that can help with identifying and correcting problems with the structural quality of the code without having to execute the app or write test cases.
- The lint tool checks your Android project source files for potential bugs and optimization improvements for correctness, security, performance, usability, accessibility, and internationalization.
- When using Android Studio, configured lint and IDE inspections run whenever you build your app. However, you can manually run inspections or run lint from the command line.
- The lint.xml file is a configuration file that you can use to specify any lint checks that you want to exclude and to customize problem severity levels.
- Figure 4 shows an execution of Lint in Android studios. It also shows all the errors that occur in the code

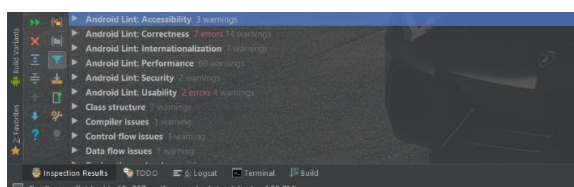


Figure 4: Lint execution