Summary:

Convert-It-All is a simple application that provides a massive list of conversions, and formula for easy use and access. The application provides access to formula for area, surface area and volume of common (and some not-so common) shapes. It also provides unit conversions for length, area, volume, energy, mass, time, pressure and force. The application includes SI, imperial and some completely non-standard (and a few utterly ridiculous) units.

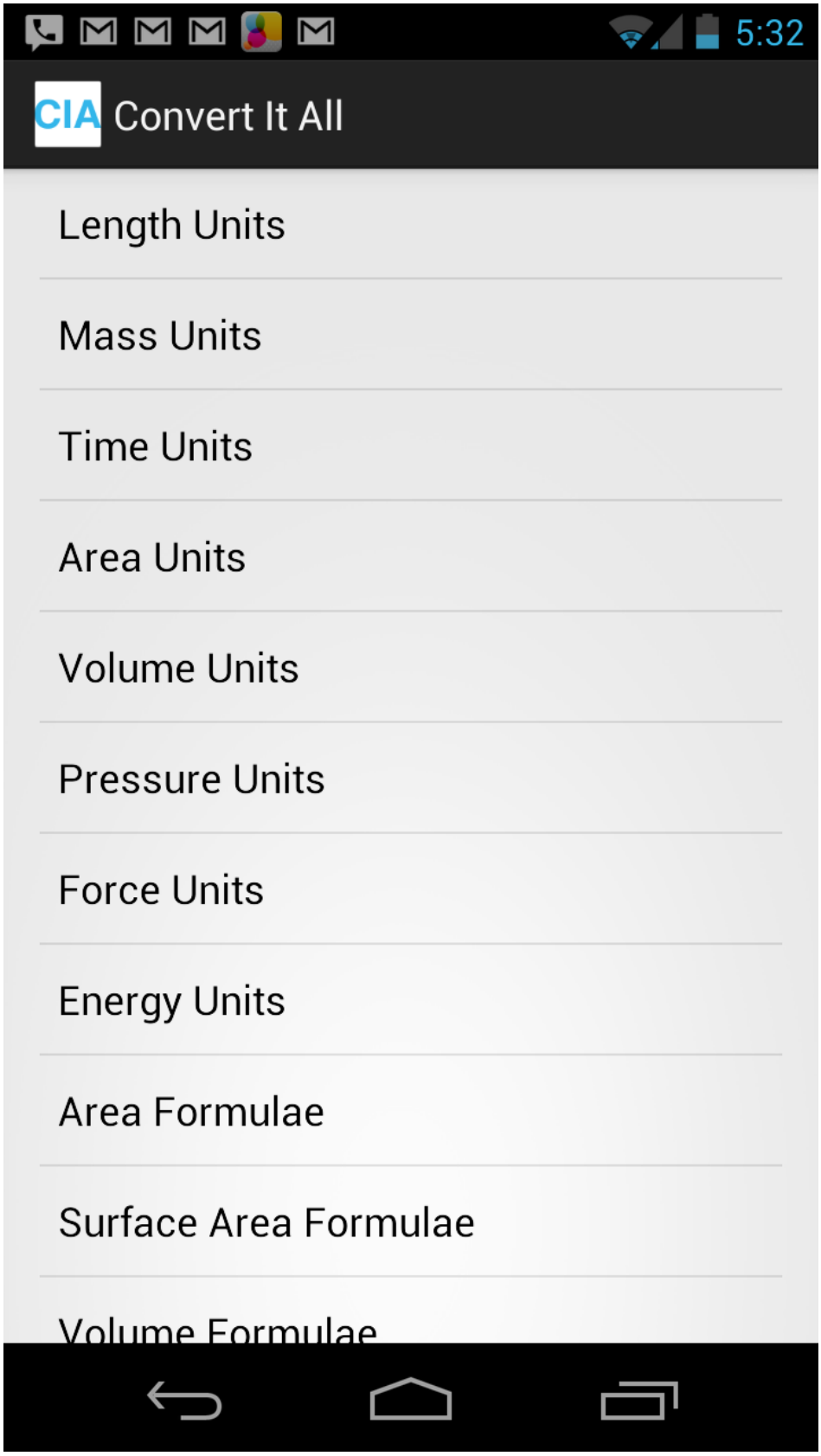
Project Report:

While this project did not present any serious engineering challenges there were a few minor hiccups along the way. The first, and probably most challenging, was understanding the new Android Fragments api. This api allowed me to build re-usable sections of the application, but is a somewhat radical change from the pre-Honeycomb apis. The second, less difficult but more frustrating, was developing a straightforward, but re-usable method to input unit conversions and formulae. Obviously Unit and Formula classes were used to provide this re-usability, and in the case of the Formula class and abstract method to provide the formula conversion callback. The last challenge that had to be solved was finding a way to easily display different sets of text-fields for the different formulae, also ensuring correct ordering of the fields for calculation. A simple, although not terribly robust, solution was to add an array describing the fields required for the formula, and ensure that the ordering was correct in that array. The array was then iterated over to generate views that were appended to a layout container in the correct order.

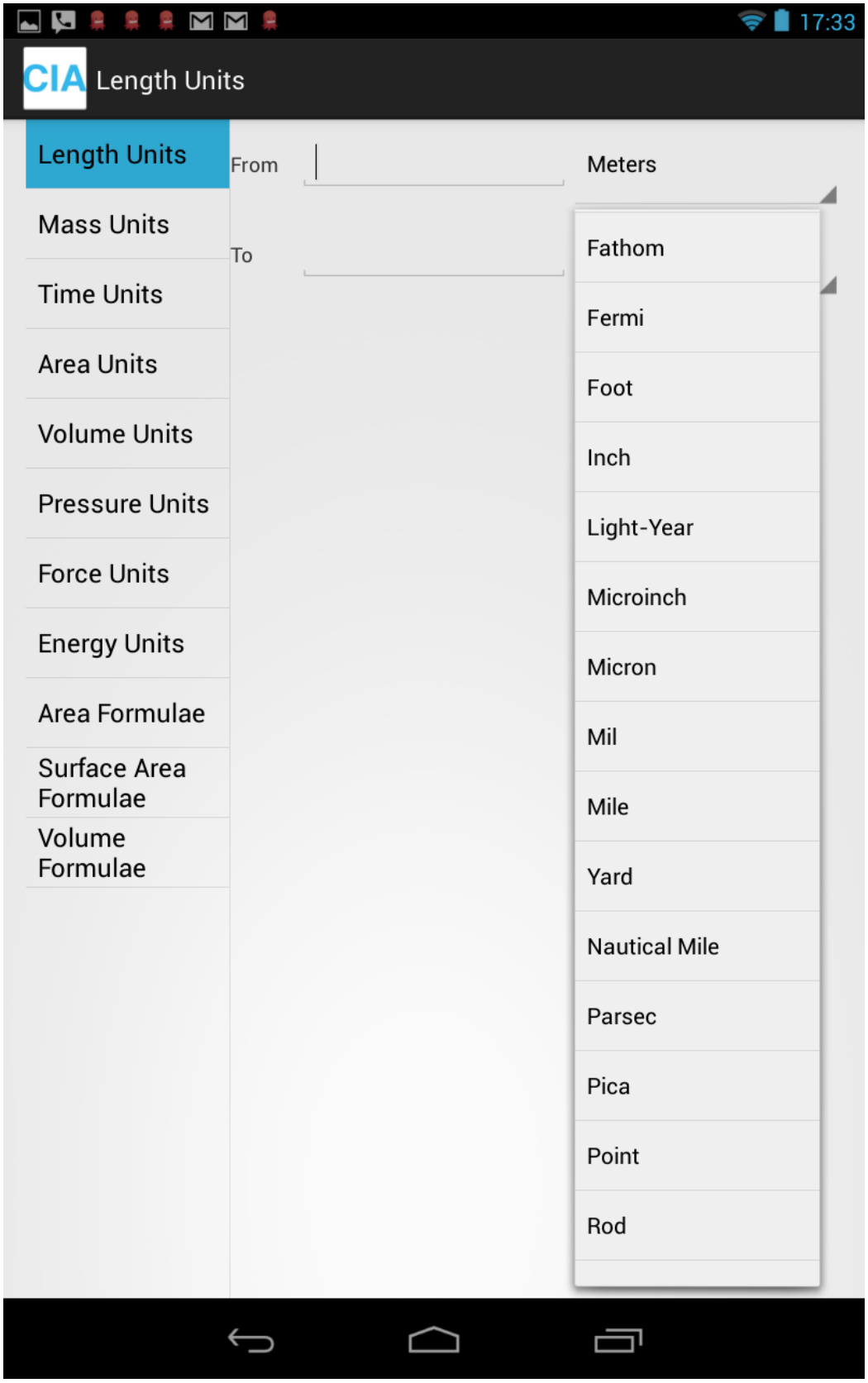
The neatest thing discovered while working on this application was also one of the challenges I described. Using the Fragments api allowed for an extremely straightforward creation of a single application with both a tablet and phone optimized layout.

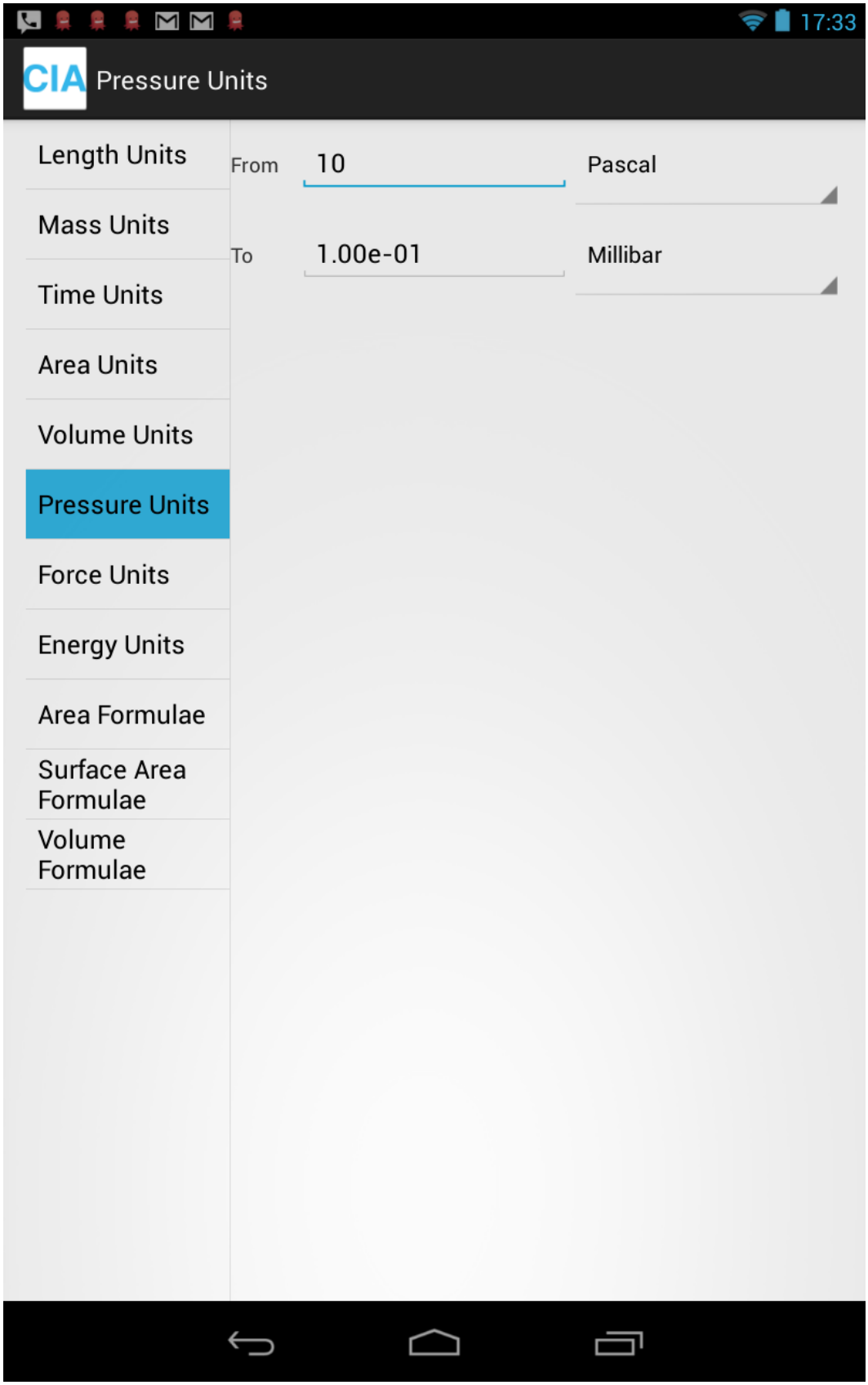
While not re-usable as they are the concept behind the Unit and Formula classes was enlightening in how to generate statically accessible objects at runtime, and is a pattern I am likely to re-use in similar circumstances. One other thing worth holding onto is the list of units and formulae themselves. These can be useful in some specific circumstances where an application may need to provide a user with multiple choices for units as input to increase ease of use in different locales.

Phone Screenshots:


5:32
CIA Convert It All
Length Units
Mass Units
Time Units
Area Units
Volume Units
Pressure Units
Force Units
Energy Units
Area Formulae
Surface Area Formulae
Volume Formulae

Tablet Screenshots




17:33
CIA
Pressure Units
Length Units
Mass Units
Time Units
Area Units
Volume Units
Pressure Units
Force Units
Energy Units
Area Formulae
Surface Area Formulae
Volume Formulae
From
10
Pascal
To
1.00e-01
Millibar