Calculator Project Plan & Notes to self

**Base requirements:**

**Buttons**

* Buttons for the numbers 0-9, the operators +-\*/, the parenthesis (), the dot ".", and = (that is a total of 18 buttons)
* This does not include +/- button or backspace/clear button 🡪 optionally add these in
* Use grid system. If 18 buttons, then will be 6x3 grid. With +/- button and clear will be 20 buttons which will be a 4x5 grid. ~~4x5 grid looks better so will add those optional buttons.~~ Removed +/-, kept clr because its useful. Made equal button bigger

**Display**

* The display need show the equation and the result.
* They do not need to be there at the same time, as the requirement is the current equation gets replaced by the answer when pressing ‘=’ or enter

**Function**

* Must respect order of operations
* Must be mapped to keys as well. So clicking or typing should work

**Layout**

|  |  |  |  |
| --- | --- | --- | --- |
| 2 + 3 + 2 | | | |
| CLR | **(** | **)** | **/** |
| 7 | **8** | **9** | **\*** |
| 4 | **5** | **6** | **-** |
| 1 | **2** | **3** | **+** |
| +/- | **0** | **.** | **=** |

**Logic**

* If requirement was to perform calculations as we go, it would be much easier. But since I have to evaluate an equation which includes parentheses (which can be nested), this requires an algorithm to perform the necessary task.
* Looks like a combination of Shunting Yard Algorithm (infix) and Reverse Polish Notation (postfix) will help achieve the desired output.
* Ref: <https://www.youtube.com/watch?v=Wz85Hiwi5MY>
* Ref: <https://www.yocutube.com/watch?v=bebqXO8H4eA>

**Key Mapping**

* 0-9 for numbers, -+\*/() for operands. “Enter” for enter. “Backspace” to remove one. “Delete” to clear
* Added “Escape” clear