**Requirements for Calc app v. 1.0**

1. **Business requirements**
2. Develop a simple calculator to accelerate the work of employees
3. **User requirements**

* Start and stop the app
* Switch to modes Regular / Engineer
* **Regular User**
* perform actions (addition, subtraction, multiplication, division) with integers, fractional, negative and positive numbers
* get help information or help about the application
* **Advanced User**
* users can perform calculations such as square root and squaring

1. **Functional requirements**
2. **Input/output field** 20 characters is available for input from the keyboard, the numeric panel, the clipboard
3. entering a positive number in the input/output field
4. entering the operation sign in the input/output field:

the field should be cleared, wait the next operand;

it does so until we push ‘=’ and the result appears

1. entering a negative number in the input/output field from the keyboard, the numerical panel, the clipboard
2. entering “0” from the keyboard waits for a comma to be entered,

a repeated “0” is ignored,

a number after “0” ?

1. if length of the result is greater than 20, an error message is displayed: “Overflow”
2. **Digital panel**
   * 1. When the button is pressed, the corresponding symbol appears in the input/output field
     2. Double click on “,” or clicking “,” if the input/output field is empty gives an Error
     3. Click on “+/-“ invert the operand
3. **Arithmetic panel**
4. Deleting the last entered value “<”:
   1. Remove the last digit of a number, if a digit was entered
   2. Remove arithmetic sign and return a number on the input/output field, if the sign of arithmetic operation was entered last
   3. Remove “=” declined the result and allows to continue calculation
   4. Have a hover prompt
5. Button “C”
6. should clear all the sequence of calculation, living the i/o field empty
7. have a hover prompt
8. Function add
9. Add positive, negative, integers and fractional numbers
10. If the result exceed a 20-bit number, an overflow error is thrown
11. leads to the calculation of the result when the number of operands is more than two
12. Function subtract
13. Subtract positive, negative, integers and fractions numbers
14. If the result exceed a 20-bit number, an overflow error is thrown
15. when calculating more than two operands, it works as an intermediate equals
16. Function multiply
17. Multiply positive, negative, integers and fractions numbers
18. If the result exceed a 20-bit number, an overflow error is thrown
19. when calculating more than two operands, it works as an intermediate equals
20. Function divide
21. Divide positive, negative, integers and fractions numbers
22. If the result exceed a 20-bit number, an overflow error is thrown
23. Attempting to divide by 0 throws an Error
24. If, as a result of division, an infinite fraction is obtained, then rounding to the second character after the decimal point should be performed
25. a fraction with a finite number of decimal places must be rounded to the value that fits on the screen
26. can show the result when the number of operands is more than two
27. Button “=” should perform calculations with the minimum number of operands equal to 2
28. **Switching to engineering mode**
    * 1. The window should enlarge
      2. The I/O screen should stretch to the width of the window
      3. Function Square
      4. Divide positive, negative, integers and fractions numbers
      5. If the result exceed a 20-bit number, an overflow error is thrown
      6. a fraction with a finite number of decimal places must be rounded to the value that fits on the screen
      7. Function Square root
      8. Extracts the square root of integers, fractional, positive numbers
      9. in case of an attempt to extract a root from a negative number, it returns an error “Square root of negative number”
      10. result over 20 characters is reduced to 20 visible characters
29. Button “Expand to full screen” should be disabled by default
30. Button “×” closes app
31. If I/O field isn’t empty, asks “Do you really want to close the application?”
32. **Non-functional requirements**
33. The application must work under Windows 10
34. The application must be delivered to users as an exe-file with a size of no more than 5 Mb
35. Work speed no more than 5ms
36. Start-up time no more than 20ms
37. This is a desktop application

