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CircuitLib Requirements Document

This document sets forth requirements for the initial version of CircuitLib, a graphical user interface that allows users to visually experiment with various common electric circuits. The requirements and feature set may change for subsequent releases.

1) The Graphical User Interface will comprise a series of tabs.
2) Each tab displays a fixed arrangement of circuit components.
3) Circuit component configurations may include (but are not limited to) series and parallel RLC filters, transistor oscillators, and op amp differentiators and integrators.
4) The individual component values (resistance, inductance, and capacitance) will be editable.
5) Numerical and/or exact solutions to the component configuration will be computed in the background
6) Each tab and corresponding circuit configuration will produce output (i.e. mathematical functions) relevant to the specific circuit.
7) Some output shall be displayed graphically (i.e. voltage vs. time graphs, frequency response graphs).
8) The software is not intended to replace the function of SPICE simulations, but should be easier and quicker to use for analysis of the specific supported circuit configurations.
9) The target audience comprises:
    - Academic instructors or tutors who want a visual aid to compliment mathematical analysis of circuits
    - Electrical hobbyists desiring a library of common circuit configurations with which to experiment
10) The software will run on modern computer systems.
11) The software shall be portable and not require installation.