Assignment 2
AC Circuit Solver
Design Document

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1 Overall Design

In the project two classes have been used, namely drawer and solver.

2 Sub Components

The following are the two classes we intend to have in our project and a brief description of the purpose they serve.

- **Class Drawer:** This class is used to draw the circuit as SVG.
  Function main : This function is a core of file where program starts working. This is where we start reading input file and send its words to the validator function for validating. After validating file we start processing for making svg file.
  Function validator: This function is check for words in input file and validate it by REGEX.
  Functions draws: These functions are group of function which write to output file with svg code. Some examples of the functions are draw_line, draw_Resistor, draw_inductor, draw_capicator, draw_voltage, draw_inductor, drawground whose working are self explanatory.
  Function drawelement : This function get details of each line one by one sent by main function and find what element it is and draw that element in between that nets which are given in input file. This function is where every function from group draws is called to draw that part.
- **Class Solver:** This class solves the circuit using different approach for different kind of circuits(RL,RLC,RC,LC).We used phasors to solve the circuit.

3 Testing

Gdb was used for testing the logic we made was implemented correctly or not. Each component require testing to check whether it is showing correct SVG or not.This was done using Chrome .The voltage and current across each component was checked using text comparator.We calculated the answers manually then saved it in a file called **manual.txt** ,and then made a **results.txt** which had the voltage and current across each component and match **results.txt** with **manual.txt** using text comparator.

4 Additional Features :

After the SVG formed ,user has the option to zoom in or zoom out SVG using on-screen button.We implemented this feature using **svgpan.js** .