Assignment 2:-
Design Document

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Abstract

In this assignment, we have created an AC Circuit Solver in C++ using Flex and Bison.It reads the list of components and draws a circuit and also calculates & display the value of current and potential across that component.

1 - Overview

The program will start with parsing the input file and check if the input has been given in proper format and store it. After the parsing is done, the program will calculate the current and potential difference across each component and create an SVG file according to the given data.

2 - Flex

In Flex we have defined the different types of tokens, using regular expressions, which is to be accepted and ignored. Also storing of details of the components happen here.

3 - Bison

3.1 - Grammar

The grammar of the input which the program accepts has been defined here. Every input should start with the name of the component followed by the netlist and then the value of the component along with the proper unit.

3.2 - CalV

This function determines whether a component is in series or parallel with respect to other components according to the given configuration of the netlist and calculate the current and potential difference across each component.It stores them and afterwards outputs them in a text file.

3.3 - CalC

This function calculates the coordinates at which the components are to be drawn. It takes the ground symbol as the point of reference. The ground symbol has fixed coordinates, and every other component is built around it.

3.4 - Display

This function creates an SVG file, draws all the component in the coordinates given by the CalC function and then connect all the components by drawing wires or lines between them accurately in a non-jumbled manner.

4 - Javascript

We are planning to use javascript to make the image zoomable and to show the values related to each component whenever we hover the cursor over it.