Lab 02

spice

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Part 1 (prelab)

CODE IN PART1 FOLDER

A computer screen shot of a computer code

Description automatically generated



A number with numbers on it

Description automatically generated with medium confidence



A math equation with numbers and symbols

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

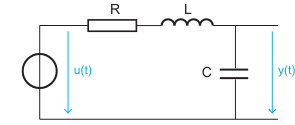
Description automatically generated

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | LT SPICE | OUR CODE |
| CIRCUIT1 | V(1) | 30 | 30 |
| V(2) | 16. 956522 | 16.9565 |
| I(VB) | -0.260870 | -0.260870 |
| CIRCUIT2 | V(1) | 40 | 40 |
| V(2) | 14.6341 | 14.634146 |
| V(3) | 32.1951 | 32.195122 |
| V(4) | 112.195 | 112.195122 |
| I(VB) | -1.26829 | -1.268293 |

Same results, but LT SPICE counts every current in the circuit, our code only calculate the current in the voltage sources.

PART2

CODE IN PART2 FOLDER



I added support for inductors, capacitors, and AC analysis, and changed the parsing of the netlist to read the user .ac command and also voltage source type.

# In circuit1 (overdamping):

R=3000, C=10n, L=10m

, Q=0.333

A screen shot of a computer

Description automatically generated

A screen shot of a graph

Description automatically generated

A graph with a curve

Description automatically generated A graph with a blue line

Description automatically generated

# In circuit2 (critical):

R=2000, C=10n, L=10m

, Q=0.5

A graph with green lines

Description automatically generated A screen shot of a graph

Description automatically generated

A graph with lines and numbers

Description automatically generated

A graph with a blue line

Description automatically generated

# In circuit3 (underdamping):

R=500, C=10n, L=10m

, Q=2

A graph on a black background

Description automatically generated A screen shot of a graph

Description automatically generated

A graph with a line

Description automatically generatedA graph with a blue line

Description automatically generated

The results are pretty much the same.

the code shows all bode plots for all unknown node’s voltages, and currents in voltage sources, like we had in the lecture.

PART3

CODE IN PART3 FOLDER

A black screen with white lines

Description automatically generated

A black screen with white lines

Description automatically generated

A graph with lines and numbers

Description automatically generated

A graph of a function

Description automatically generated

The results are pretty much the same.

BOUNS

A screen shot of a computer code

Description automatically generated



A screenshot of a computer code

Description automatically generated

The frequency isn’t manually inserted but it changes with the netlist, also I made Prefixes a function in part3, as we use it a lot in this case (with fmax, fmin)