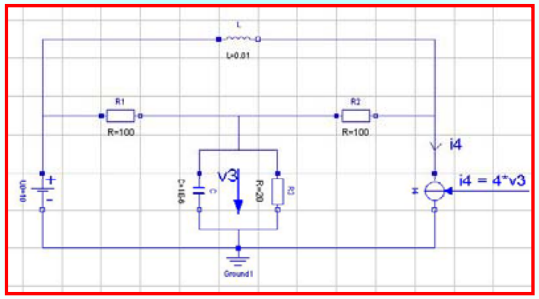
5th Homework

- In this homework, we shall exercise the modeling of a simple electrical circuit using bond graphs.
- We shall also model the same electrical circuit using a circuit diagram (a wrapped bond graph).
- We shall finally determine the overhead associated with the wrapping technique.

Electrical Circuit

- Given the following circuit:



Electrical Circuit II

- The circuit is to be modeled using bond graphs without wrapping.
- Use a sensor (detector) element together with a modulated source element to implement the non-linear current source in the circuit.
- Simulate the circuit during *50 μsec*, and plot v_3 as a function of time.

Electrical Circuit III

- The circuit is to be modeled using bond graphs with wrapping, i.e., using the bond graph electrical library.
- Simulate the circuit during *50 μsec*, and plot v_3 as a function of time.
- Compare the number of initial and final equations as well as the simulation time with those obtained in the unwrapped bond-graph solution.