Problem Wk.8.1.2: Modeling Resistors

Read the Software Lab 8 Handout before doing these problems.

Part 1: Resistor constraint

If you have an `r` ohm resistor connected between nodes `n1` and `n2`, and a current `i` flowing through it (from the `n1` to the `n2` node), what constraint does that component exert on variables `n1` (denoting the voltage at node n1), `n2` (denoting the voltage at node n2), and `i` (denoting the current through the resistor)?

Choose the coefficient for each term. Pick the first non-zero coefficient to be positive; this is an arbitrary choice, but it makes checking easier.

1. ? * n1 + ? * n2 + ? * i = ?
   - ?
   - 0
   - 1
   - -1
   - r
   - -r

Part 2: le.Equation

Express the resistor constraint as an instance of the `le.equation` class. Assume:

- The resistor value is 1000
- The names of the nodes are the strings: 'n1', 'n2'
- The name of the current is the string: 'i'

Fill in the following Python expression:

```
e = le.Equation()
```

Part 3: getEquation

Complete the definition of the `Resistor` class (using the `Component` superclass), by finishing the definition of `getEquation`:

This problem contains one or more multiple-choice questions. When a given set of choices is used for the first time, all choices are displayed. If there are several related questions, you can assume that the same choices are available for all questions.

```
class Resistor(Component):
    def __init__(self, r, n1, n2):
        self.current = util.gensym('i_'+n1+'->'+n2) # a string
        self.n1 = n1 # a string
        self.n2 = n2 # a string
        self.r = r   # a number
    def getEquation(self):
        # your code here
```

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