

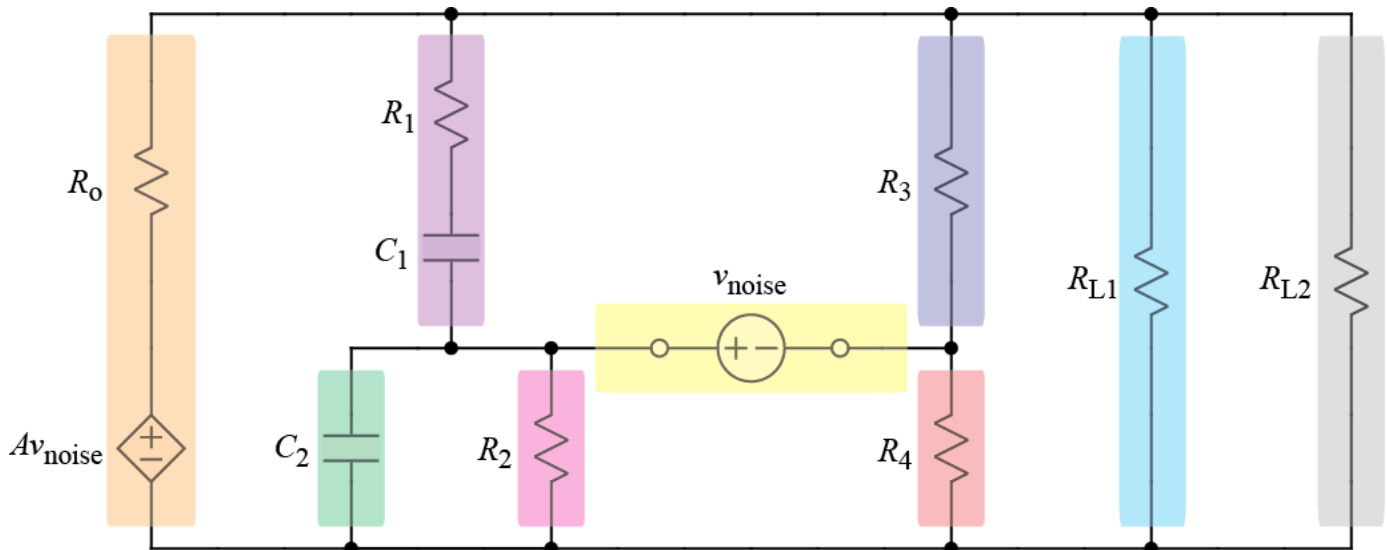
DEF: Connected components are in series if an electron flowing through one of the components would have to flow through the other components. That is, there is no fork where current can take several paths.

DEF: A branch is all the components in series between essential nodes. That is, the branch ends where current can split into two paths.

TOOL: Use different colors (after deleting dangling wires) to mark branches. A branch ends at a node with three or more currents flowing out of it.

NOTE: A dangling wire that is connected only at one end may be deleted when finding branches since zero current flows in the wire that leads to an open circuit.

Ex: The branches are shown in colored rectangles in the circuit below



Components in the same branch are in series: R_0 and $A_{v_{noise}}$ are in series, and R_1 and C_1 are in series. Non-essential nodes separate components in series, (see [CONCEPTUAL TOOLS: CIRCUITS: CONFIGURATION: Identifying Nodes](#)).