# Simulating Boolean Circuits
with Crocodile Clips

1. Double click on the Crocodile Clips icon to open the program. Clicking an icon on the main toolbar (below) opens one of several component toolbars, including power supplies, switches, input components, passive components, discrete semiconductors, logic gates, integrated components, electromagnetic outputs, light outputs, and measuring instruments.


2. Click on the icon of a NAND gate to access the logic gates toolbar (below). When you click on one of the symbols, the cursor will change to a logic gate. Move the cursor to where you wish to place the logic gate and click again to place the gate.

3. Follow the same procedure to create the circuit pictured below, representing the equation $B\overline{C}D + CD + B \cdot \overline{C} \cdot \overline{D} + AB + \overline{B}C\overline{D} + B\overline{D}$. Save the circuit in your G:\ drive as "NAMENAME.CKT" (using the names of the two people who worked on the problem).
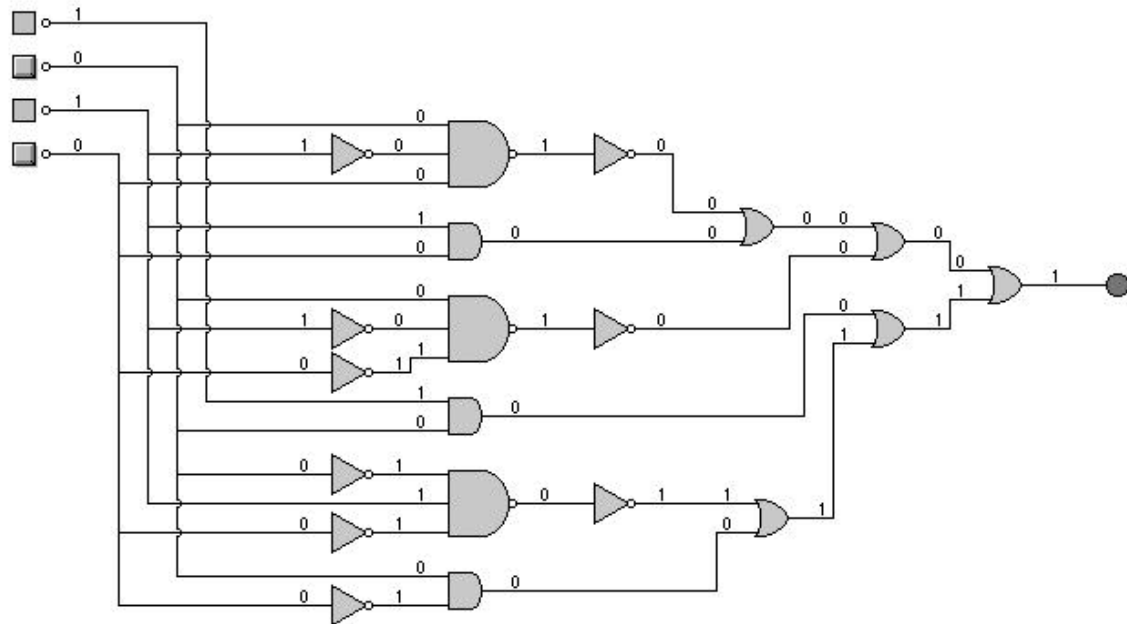
4. From the view menu (below) make sure that *View Logic Signals* is checked so that a 1 or a 0 representing the logic value will be shown at the input and output of each gate.
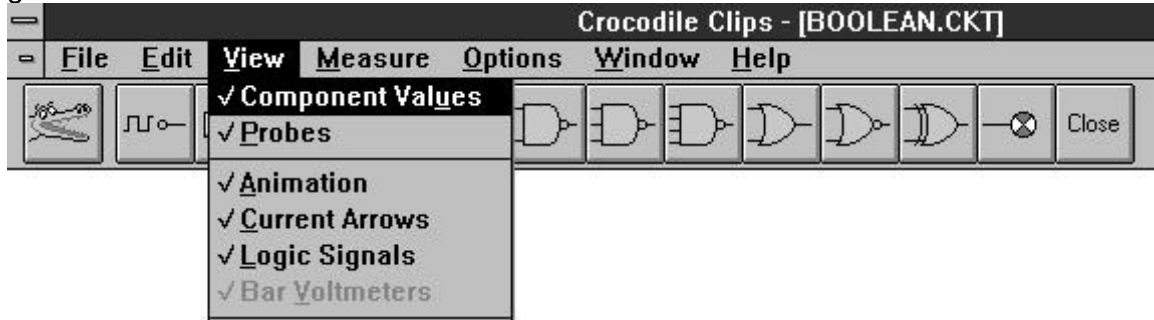
5. Use a Karnaugh map to simplify the equation in step 3.
   $$B\overline{C}D + CD + B \cdot \overline{C} \cdot \overline{D} + AB + \overline{B}C\overline{D} + B\overline{D} = x$$

	CD	CD	CD	CD
AB				
AB				
AB				
AB				

_____ = x

6. Add gates to your circuit connected to a different output, to represent your simplified solution to the problem. Does the second output turn on and off at the same time as the first? If so, then you have successfully created an equivalent circuit. Congratulations. Save your file again.