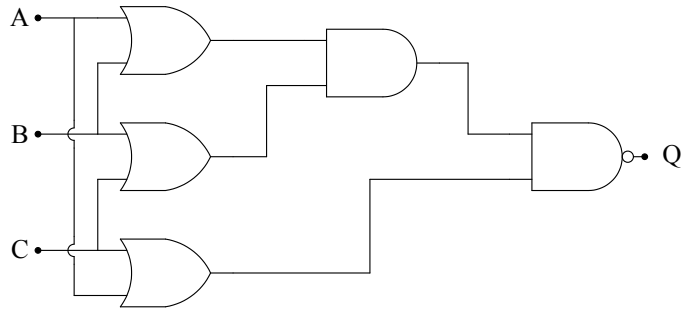
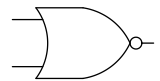


Due Wednesday, November 7

1. Determine the truth table (with inputs A, B, C, and output Q) for the circuit shown below.



2. Using only NOR gates (shown), show how to construct (a) a NOT gate, (b) an OR gate and (c) an AND gate. (In all cases, the gates are the 2-input version.)



3. Express each of the following numbers in the requested representation. For (a)–(e), assume unsigned values, while for (f)–(h), assume an 8-bit two’s-complement representation of a signed value for the binary and hexadecimal expressions. Do the actual conversions by hand, though you can use a calculator for arithmetic if you need to.

- (a) Convert  $135_{\text{dec}}$  to binary and hexadecimal.
- (b) Convert  $67_{\text{hex}}$  to binary and decimal.
- (c) Convert  $0001\ 1001_{\text{bin}}$  to decimal and hexadecimal.
- (d) Convert  $98_{\text{dec}}$  to binary-coded decimal.
- (e) Convert  $0111\ 0011_{\text{bcd}}$  to decimal.
- (f) Convert  $-23_{\text{dec}}$  to binary.
- (g) Convert  $1001\ 1001_{\text{bin}}$  to decimal.
- (h) Convert  $E3_{\text{hex}}$  to decimal.