

Nand2Tetris project 1

using Nand gates, implement the following
w/ only primitive & composite gates created

- ✓ Nand if $a=b=1$ then $out=0$ else $out=1$
- ✓ Not if $in=0$ then $out=1$ else $out=0$
- ✓ And if $a=b=1$ then $out=1$ else $out=0$
- ✓ Or if $a=b=0$ then $out=0$ else $out=1$
- ✓ Xor if $a \neq b$ then $out=1$ else $out=0$
- ✓ Mux if $sel=0$ then $out=a$ else $out=b$
- ✓ DMux if $sel=0$ then $(a=in, b=0)$ else $(a=0, b=in)$
- ✓ Not16 for $i=0..15$ $out[i] = \text{Not}(in[i])$
- ✓ And16 for $i=0..15$ $out[i] = \text{And}(a[i], b[i])$
- ✓ Or16 for $i=0..15$ $out[i] = \text{Or}(a[i], b[i])$
- ✓ Mux16 if $sel=0$ then for $i=0..15$ $out(i) = a(i)$
else for $i=0..15$ $out(i) = b(i)$
- Or8way $out = \text{Or}(in[0], in[1], \dots, in[7])$
- Mux4way16 see book!
- Mux8way16 see book!