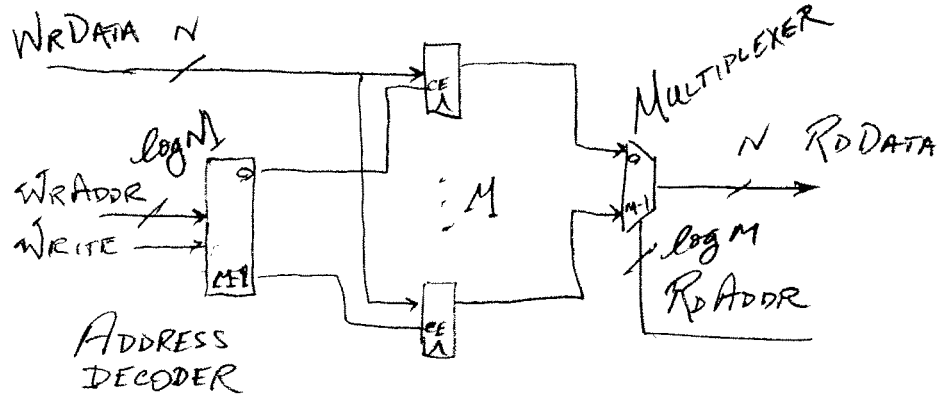
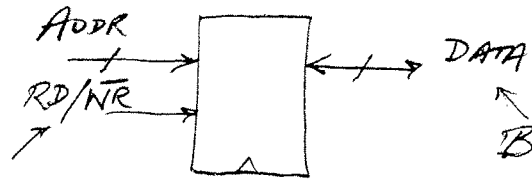


M x N Memory



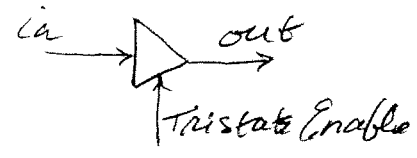
This is DEMUX-PORTED. Simultaneous Read/Write
 Many pins if we only Read or Write each cycle.



1: Read
 0: Write

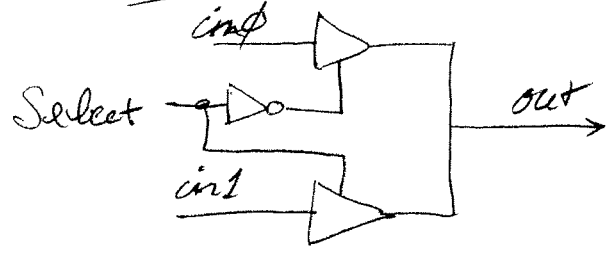
Bidirectional
 Read: Data comes out
 Write: Data goes in

TRI-STATE BUFFERS



Acts like a switch
 EN = 0: Output is disconnected
 EN = 1: Acts like a wire

Example

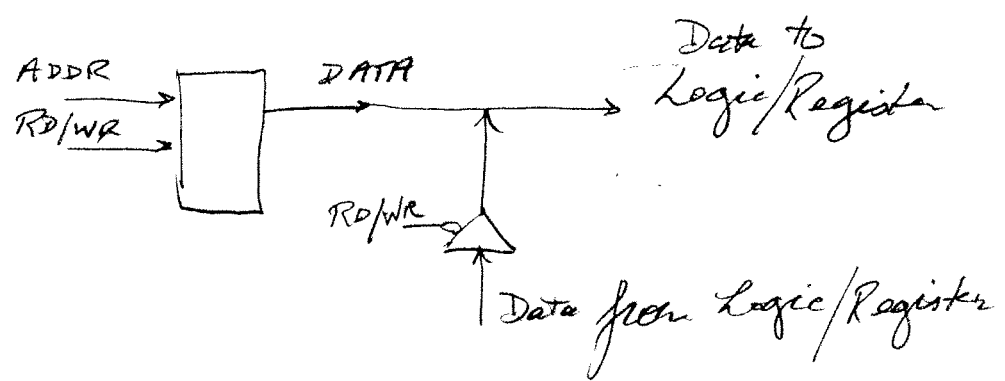
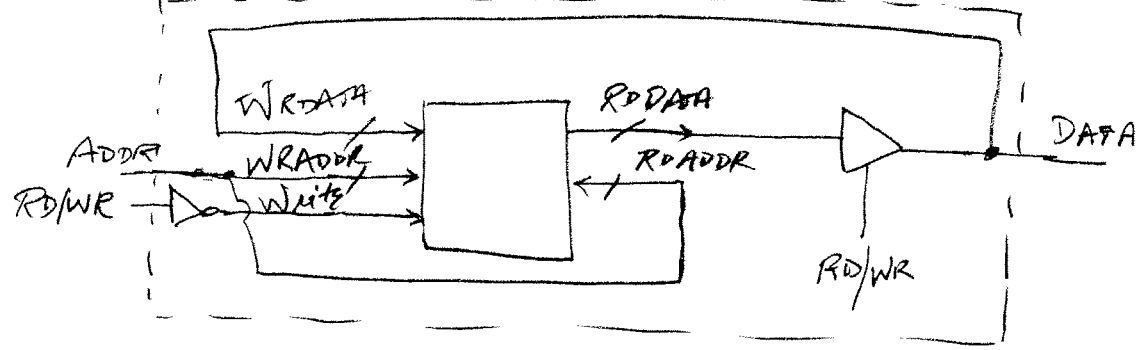


Select = 0: out ← in0
 = 1: out ← in1

Key: Only 1 tri-state is enabled at a time

THIS IS A Mux!

Single-Ported Memory



Verilog

Tri State Value : Z

eg. assign data = en ? A : 16'hZ;
 assign data = ex ? 16'hZ : B;

This is the only time you can have 2 assigns to one value.

Z in simulator means signal is not connected.