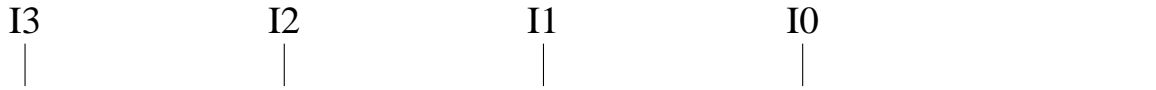


### Shift Unit

**Part A** Design a four bit arithmetic shifter that can shift one bit left or right using 2 to 1 multiplexer devices (do not implement the MUX). The inputs should be  $I_0, I_1, I_2, I_3$ , and  $Right/\overline{Left}$ . The outputs are  $O_0, O_1, O_2$ , and  $O_3$ .



**Part B** Now reimplement the design using only pass gates and inverters. Use the same input and output signals.

