

Design the circuit to implement the desired operation.

- There are two control inputs labeled  $C_1$  and  $C_2$ , three data inputs labeled  $A$ ,  $B$ ,  $C$  and  $D$ , and two outputs labeled  $F_1$  and  $F_2$ .
- There are four control conditions:
  - when  $C_1 = 0$  and  $C_2 = 0$ , then output  $F_1$  has  $A$  and output  $F_2$  has  $\bar{B}$ ;
  - when  $C_1 = 0$  and  $C_2 = 1$ , then output  $F_1$  has  $D$ , and output  $F_2$  has  $B$ ;
  - when  $C_1 = 1$  and  $C_2 = 0$ , then output  $F_1$  has  $C$ , and output  $F_2$  has  $\bar{D}$ ; and
  - when  $C_1 = 1$  and  $C_2 = 1$ , then output  $F_1$  has  $B$ , and output  $F_2$  has  $D$ .

Each input is supplied on a single wire, as shown below. If you need them to go to multiple locations you must explicitly show the wiring.

The only components permitted are one 2-to-4 line decoder and no more than eight tri-state buffers (any of the four types covered in Lecture 15).

