Problem 1
Design an 8 × 3 priority encoder with inputs $D_0 – D_7$, and output X, Y, Z, V (valid).

Problem 2
Design an 8 × 1 Mux.

Problem 3
Implement an 8 × 1 Mux using 2 × 1 Mux's.

Problem 3
Implement an 16 × 1 Mux using 4 × 1 Mux's.

Problem 4
Implement the following Boolean expression using an 8 × 1 Mux.

$F(A, B, C, D) = \sum m(4, 6, 7, 8, 12, 15)$

Problem 5
Repeat Problem 4 using a 4 × 1 Mux and external gates.