

Lab 6. Decoder Design – Create Your Own IP

1. In this part, you will create an IP of a 2-to-4 decoder with enable, and then build a 3-to-8 decoder using the IP. (Total: 100 pts)
 - a. Create a block design of a 2-to-4 decoder with enable, of which truth table is given in Figure 1. Package the design as a new IP (refer to the tutorial). **Do not forget** to give a proper name to the IP. If you use the same name for two different IPs, it will cause an error. Show your result on Bays3 board (40 pts).

EN	A ₁	A ₀	D ₀	D ₁	D ₂	D ₃
0	X	X	0	0	0	0
1	0	0	1	0	0	0
1	0	1	0	1	0	0
1	1	0	0	0	1	0
1	1	1	0	0	0	1

X means don't care.

Figure 1. Truth table of a 2-to-4 decoder with enable.

- b. Create a 3-to-8 decoder (without enable) by using the IP of a 2-to-4 decoder (with enable) you generated in part (a). Show your result on Basy3 board (60 pts).