

## Lab 4 Report

**1. Demo:**

7-segment Display:

[https://drive.google.com/file/d/1\\_E8w7hH6I0HiSCuTwzC-H8xvZCXWQph4/view?usp=sharing](https://drive.google.com/file/d/1_E8w7hH6I0HiSCuTwzC-H8xvZCXWQph4/view?usp=sharing)

FredHouse:

<https://drive.google.com/file/d/1xP73w5Ctp1zPJJa5PAUn9fHFWXfPoEM1l/view?usp=sharing>

**2. A new table, based on the one from Lab #3, that lists each item for sale along with its UPC code, discount status, and expensive status.**

Item	UPC code	Discounted?	Expensive?
Dumbledore's deluminator	000	NO	YES
Chocolate frog	001	NO	NO
Nimbus 2000	011	YES	NO
Hermione's quill-pen	100	NO	YES
Rapunzel's hair	101	YES	YES
Snow White's apple	110	YES	NO

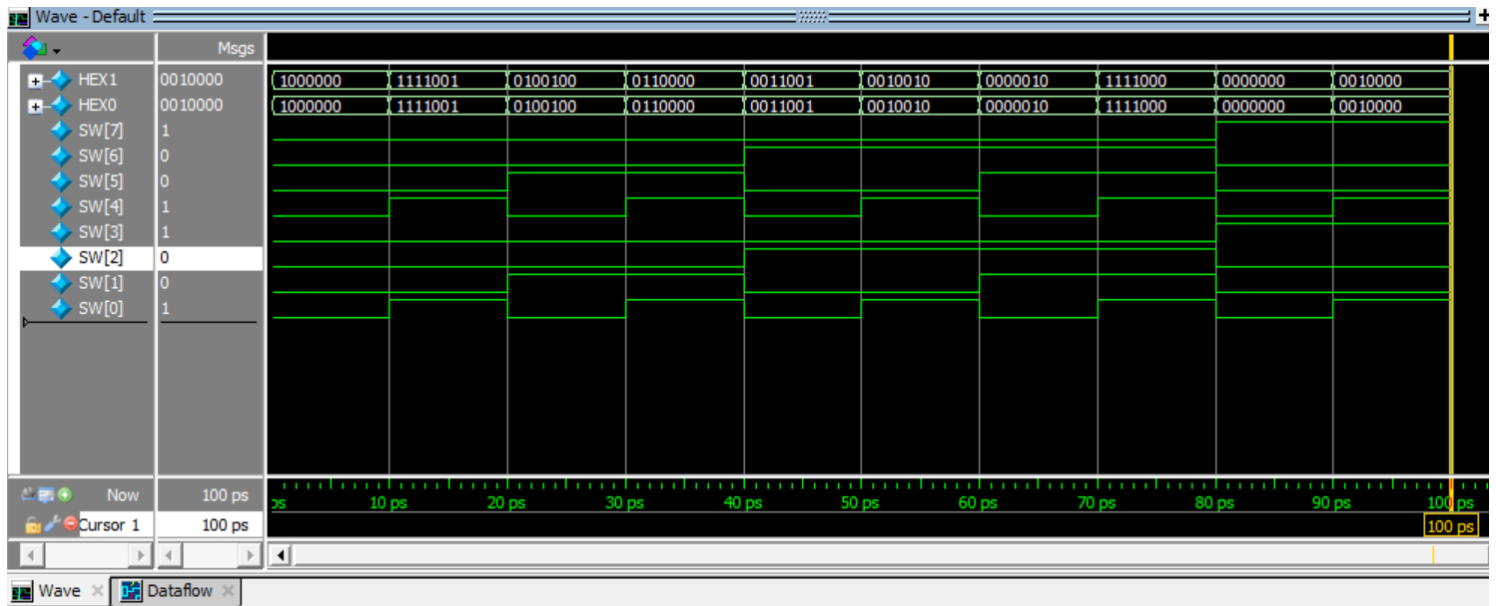
**3. A paragraph explaining why you assigned your products “expensive” vs “inexpensive.”**

**Dumbledore's deluminator** is expensive as it is one-of-a-kind and belongs to the greatest witch, it can light the surrounding when needed or turn it into complete dark as you wish, might serve as navigator sometimes (even without Wi-Fi); **chocolate frog** is an interesting snack, low cost to produce, thus inexpensive; **Nimbus 2000** was once the best, but Nimbus has now updated to Nimbus 2021, which makes 2001 a out-of date and clearance (inexpensive), you can play quidditch or use it as an automatic sweeper; **Hermione's quill-pen** is special as you never need to refill the ink and it contains power from God of Study, and has Hermione's luck attached, pray to it, you might get better grades on your exams, not replicable, expensive for sure; **Rapunzel's hair** is so beautiful and long, might be the best wig in the world, (SECRET: it might help you find your Mr. right), it's expensive and worth the price; **Snow White's apple** is the only one in the world and a reminder of your childhood, maybe keep it for decoration, or you can still eat the other non-poisoned half of it (see if a witch turns up and catches you!).

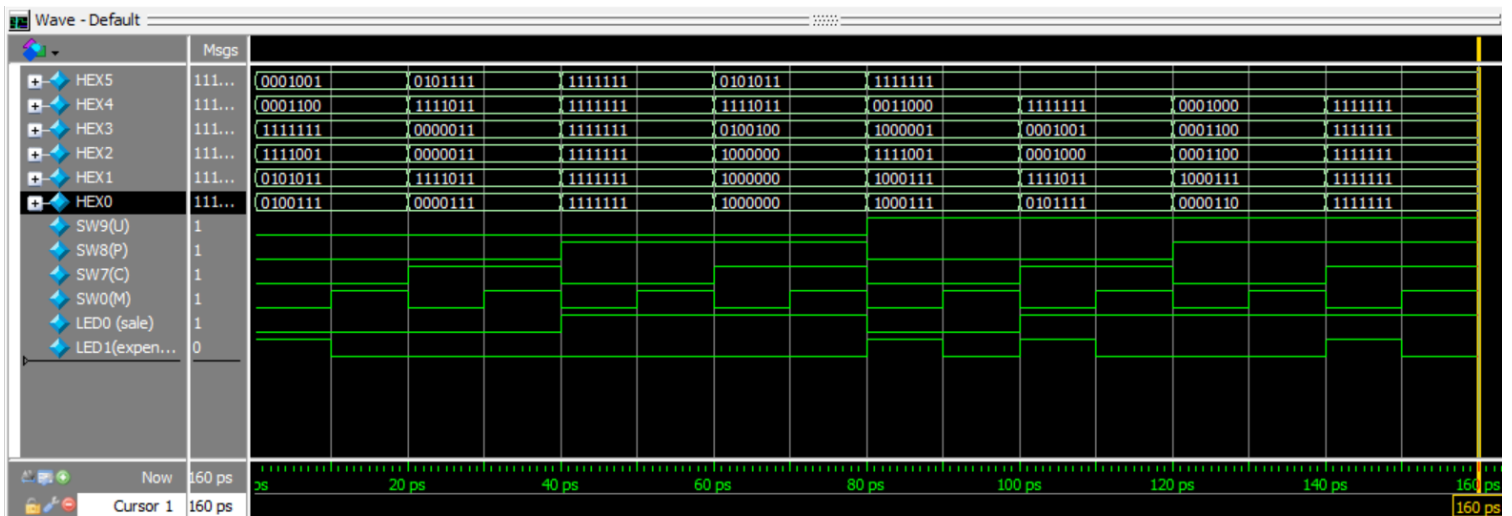
4. A drawing of what the circuit does when given each of the unused UPC codes (from Assigned Task – Don't Cares).

010:  
HP 2P6E  
111:  
111 2P0A

5. Screenshot of ModelSim simulation demonstrating all possible inputs to the 2x7seg module.



6. Screenshot of ModelSim simulation demonstrating all possible combinations of UPC code and mark/no mark inputs for Fred's House of Useful Stuff.



**7. Approximately how much time did you spend on this lab (including reading, planning, design, coding, debugging etc.)?**

10 hours.