1. **7-Segment Display Driver**

For this task, I used a VHDL circuit in order to run the 7 segment display. Using a 4 bit binary input representing numbers 0 through 9 and letters A through F, and an output of a 7 bit signal, I called the activation on the GHDL board display. This process clearly showed how a visual representation of the hexadecimal values being used, and helped map out how the binaries help to display outputs.

I ran the simulation without using a board, instead using GHDL. To set up the simulation, I first created a testbench file, which helped create a loop and call for the main file. With the simulation, I was able to compare the inputs with their corresponding outputs. I also used edge cases like 0 and 15, which were used to see whether the driver would follow the minimum and maximum inputs properly.

2. **Add Two Numbers**

For this task, again, I used a VHDL circuit to add two 4 bit numbers to produce a result of a 5 bit number. The circuit works by adding a 0 to every 4 bit input, which is a precaution in the case of overflow. The sum after the addition then signals an output.

For this simulation I again used GHDL instead of a board. First, I created a testbench file, which looped and fed different combinations of inputs into the adder. Looking at the 5 bit outputs that resulted, I compared them to the expected outcome from the sum. Using this method, I also checked that the circuit properly showed overflow in the outcome.

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