

Optional Assignment 1

QUESTION 1:

Design a half adder in VHDL and enter it into Quartus or MAX+PLUS CAD tool. Compile your design and simulate it under all input conditions to ensure that it works correctly. Synthesize your design and program the board. For inputs use the two push buttons. You will require two outputs (sum and carry). Use the decimal points on the two seven segment displays as outputs. Test the circuit and make sure it is working properly.

QUESTION 2:

Using VHDL and the CAD tool design a logic circuit to display decimal digits on one of the seven segment displays. The inputs to your circuit are push buttons 1 and 2 (PB1 and PB2). Design and implement a circuit using a seven segment display and push buttons PB1 and PB2 such that

- display '0' when neither PB1 nor PB2 is pushed.
- display '1' when PB1 is pushed but not PB2
- display '2' when PB2 is pushed but not PB1
- display '3' when both of them pushed simultaneously.

Compile, simulate and download this circuit into UP1. Test the circuit and make sure it is working properly.