Completing this assignment takes three steps:

1. Brainstorm about what the best solution would be for the problem in the assignments and *sketch the chosen solution* (top level and sublevel functional blocks that you think you will need).

2. Write the code, *verify* it with a *testbench* using ModelSim, and debug it.

3. Program the DE1-SoC board with your solution and *test* its functionality. Check the RTL-viewer to see if your design is implemented as you intended.

After completing *every* step, call your instructor to verify that you are done with that step.

Assigment 3: Doing some calculations

Create a system where you can input a number in binary with the switches SW[9..6]. The number must be displayed on HEX5. Do the same with SW[3..0] and HEX3. When you press KEY0, the sum of the two numbers must appear and stay on HEX1 and HEX0, even when releasing the button. For example, if we insert 0xA+0xF and press KEY0, 0x19 appears, where the 1 is displayed on HEX1, and the 9 on HEX0. If the sum is smaller than 0x10 the leading 0 will not be displayed, and HEX1 must be dark (so for results 0x01, 0x02, . . . 0x0F, we don't see anything on HEX1, only on HEX0). Only if we press KEY0 again, a new calculation is made.

Use the seven-segment display component from the previous assignment and make sure that 4 port-maps are used to instantiate the four seven-segment displays.