

EEL 4712C: Digital Design

Spring 2024

LAB 00: VHDL and Quartus Quickstart Tutorial (24 Points)

Homework

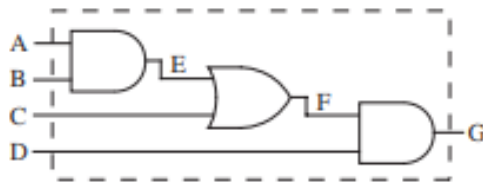
- Install Quartus software and run the tutorials provided on canvas **(5 pts)**
- Implement the counter with the seven-segment display design of the VHDL slides on the DE10 Boars. **(10 pts)**
- Answer VHDL questions below. **(9 pts)**

Deliverables:

- Summarize of your work in a report. Template for lab report is provide on Canvas

VHDL Syntax and Coding Questions

1. Which of the following are legal VHDL identifiers? **(1 pts)**
123A, A_123, _A123, A123_, c1__c2, and, and1
2. Which of the following are equivalent in VHDL? **(0.5 pts)**
ABC, abc, Abc, ABc
3. **True or false:** If statements may only exist inside a process. **(0.5 pts)**
4. What is the difference between a sequential statement and a concurrent statement? **(1 pts)**
5. Write the complete VHDL code (entity and architecture descriptions) for the following circuit: **(2 pts)**



6. Determine what is wrong with the follow VHDL code snippet and fix it: **(1 pts)**

```
process(x1, x2)
begin
    out1 <= (x1 and x2) or x3;
end process;
```

7. Create a truth table for the following circuit: **(2 pts)**

