

TFE4141 Design of Digital Systems 1

Assignment 3: Vivado Tutorial with Simulation and Synthesis

Deadline: September 15, 2023, at 23:59

Task 1: Go through the Tutorial

This tutorial is meant to guide you through the design flows of the Vivado Design Suite and get you familiarized with the workspace.

1. Go through Lab 2 of the tutorial attached to this exercise. Start by reading Page 4 through 7 and then jump to Page 21.
2. Answer the questions in Task 2 when you have completed the tutorial.

Task 2: Questions from the Tutorial

1. How many flip-flops are used in the design?
2. How many LUTs are used in the design?
3. What is a LUT?
4. What is the total on-chip power?
5. Mention one thing you can explore in the following steps of the design flow:
 - Simulation
 - Synthesis
 - Implementation
6. Hand in answers to the questions.

Task 3: Simulation of Testbench and Component from Assignment 2

1. Start a new project in Vivado.
 2. Make a new source file and type in the VHDL code you wrote under task 2 point 3 in assignment 2.
 3. Simulate the design and check if it behaves as expected. Extend the testbench with additional stimuli as needed.
 4. Hand in the VHDL code you have written (including the testbench)
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