[Introduction to Computer Architecture'21] Lab: Assignment 3

Description: _Implement_ and _Simulate_ a 2's complement circuit for 3 input A, B and C (for input zero let its 2's complement is also 0) using Verilog with ZYBO Z7 board.

Requirement(s):

1- Create 2 _projects_:
   a. **First**:
      i. Create a Module to implement a 2's complement circuit (_TWOSComplement_).
      ii. Create a Module to simulate a 2's complement circuit (_TWOSComplementTest_):
         1. WAVE window (_4 tests_)
         2. RTL Design
   b. **Second**:
      i. Create Module to implement a 2's complement circuit (_TWOSComplement_).
      ii. Create Module to run a 2's complement circuit on ZYBO Z7 board (_ZyboTest_).

Deadline: Next lab (week 4) @ 11:59 PM and _upload_ the below files on Moodle:

1. TWOSComplement.v (_4 points_)
2. TWOSComplementTest.v (_1.5 points_)
3. ZyboTest.v (_1.5 points_)
4. Screenshot of WAVE window (_1.5 points_)
5. Screenshot of RTL Design (_1.5 points_)

**If you have any problem on _Moodle_ sent your assignment after the deadline via _email_

- **Email Subject:** Computer-Architecture-Lab-Assignment-3
- **Email Content:**
  » Your ID
  » Your Full Name
  » Zipped file contains the required files
  » Screenshot of your code in each Module
  » Screenshot of WAVE window and RTL Design

Grade: [0, 10] depend on your work.

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Rules:

1. Any submissions after the deadline are not acceptable.
2. Important Plagiarism Notice:
    a. Deliverables based on other students' solutions lead to rejection of BOTH deliverables.
    b. Examples of plagiarism (but not limited to) copying (partial) code from other students, open-source software (or Internet in general), tutors, etc.

Verilog + ZYBO Z7 board Help:

-   Check this link for Verilog syntax:
    https://www.nandland.com/verilog/tutorials/index.html
-   Check this link for ZYBO Z7 board info.:
    https://digilent.com/reference/programmable-logic/zybo/start

If you need any help regarding anything about the course, <u>ask</u>:

-   Engr. Ahmad M. Abdel-Hafeez: akassem@nu.edu.eg
-   Engr. Mohammad Rady: mrady@nu.edu.eg