

Computer Aided Digital System Design

Lecturer: Dr. Hajar Falahati

First Semester 98-99



Homework4

Modeling & Coding

Deadline 1398/09/02

1- Please think and list the limitations of the FSM modeling?

2- Authentication system

We augment a server with an authentication system. The authentication system works as follow: For a limited time, the server asks a number of simple questions (e.g., five basic mathematical operations) from the user and user must respond to five consecutive question with “**True, False, True, True, False**”, respectively. If the user did it successfully, the server allows the user to log in. Otherwise, the user will not be allowed.

Please implement this system.

Implementation steps:

- 1) Model by ASM.
 - 2) Model control unit by FSM
 - 3) Implement the control unit and datapath by Verilog.
 - 4) Write a test bench to ensure that the system operate correctly.
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3- Intelligent House again

You probably remember the Intelligent house question in HW_2!

In addition to the features listed in HW_2, suppose that when one of the residents say a mathematical expression (e.g., “ $8 + 5$ ”) the system calculates this expression and says the respond (e.g., “13”). Please suppose that the system only supports four basic mathematical operations!

Please implement this system. (Consider the features listed in the question in HW_2 and the features mentioned above **only**)

Implementation steps:

- 1) Model by ASM.
- 2) Model control unit by FSM (No need to draw that part you did in HW_2)
- 3) Implement the control unit and datapath by Verilog.
- 4) Write a test bench to ensure that the system operate correctly.

Required Documents

1. Picture of ASM and FSM charts, write the answers thoroughly and clearly.
2. Compiled Verilog modules and test benches with screenshot from waveform pages.
3. Upload the answers as a zip (rar) file on the Edmodo.

General Rules

Please consider the course rules.

- Deadlines are tight.
- You have 3-day extra time for submitting assignments/projects in the whole semester.
- 20% penalty for your late assignment/project submissions after 3-day extra time!
- Zero score for the late assignment/project submissions after uploading the solution in the course website!
- Zero score for copied assignments/projects and academic misconduct.

Deadlines

Saturday 23:59. 1398/09/02.

Contact Information

Ask your questions via the course website or send an email to:

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Good Luck