Iran University of Science & Technology
IUST

Computer Aided Digital System Design
(99-00-1)
Dr. Hajar Falahati

Homework 2: Behavioral Modeling **Deadline:** 1399/09/24 23:59 **Present:** 1399/09/27 13:00			
Problem	**Definition**	**Credit**	**Your Mark**
P0	**Team Specification** ☺	**5**	
P1	**Research**	**40**	
P2	**Sequence Detector in Verilog**	**40**	
P3	**Intelligent House**	**20**	
Total		**105**	

Required File:
Upload a zip file titled as "CAD-HW2- *Student numberi- …- Student numberj"*.

Contact Information:
Ask your questions via the course website or send an email to:
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0- Team 😊 [5 points]

Please your teammate specifications:

i. ….
ii. ….
iii. ….

1- Research [40 points]

Watch this talk and answer the following questions:
https://iscaconf.org/isca2018/turing_lecture.html
Video: https://www.acm.org/hennessy-patterson-turing-lecture
Slides: https://iscaconf.org/isca2018/docs/HennessyPattersonTuringLectureISCA4June2018.pdf

i. Who are the presenters? Introduce each one in one paragraph. [5 points]
ii. Describe the event in one paragraph. [5 points]
iii. Prepare one-page summary of the talk? [10 points]
iv. What is the take-away message from the talk? [10 points]
v. Do you agree with them? Why yes? Why No? [10 points]

2- Sequence Detector in Verilog [40 points]

Machines exploit some handshake mechanisms to communicate data with each other. For example, consider two logic devices where device A wants to send some pieces of data to the device B. Device A and Device B have a communication protocol in which device A must send 1101011 at first and informs the device B that a new bunch of data is coming.

i. Draw the Mealy FSM to detect the 1101011. [10 points]
ii. Convert the mealy FSM to a Moor FSM. [10 points]
iii. Implement Mealy FSM in Verilog (behavioral level). [10 points]
iv. Write a function to detect the next state in Mealy FSM. [10 points]

3- Intelligent House [20 points]

Consider the intelligent house in assignment 1 and implement the control unit which:

i. Plays the light music
ii. Manages air conditioner
iii. Turns lights on/off
iv. Detects the phare