

COL216 Computer Architecture

Lab Assignment 4 onwards

The objective of the lab assignments 4 onwards is to design and implement a complete ARM CPU based computer. These are organized as follows.

Assignment No.	Title	Weeks	Final submission deadline
4	ARM CPU datapath	5, 6	21.02.2018
5	ARM CPU (datapath + controller) with memory	7, 8, 9	21.03.2018
6	ARM system with on-board devices	10, 11	11.04.2018
7	ARM system with keyboard and monitor	12, 13	25.04.2018

A brief description of these assignments along with the schedule is given here. More details will be provided from time to time.

Assignment No.	Title	Activity	Week
4	ARM CPU datapath	Design and implement datapath building blocks – ALU, Shifter, Multiplier, Register File, Processor-Memory path	5
		Integrate datapath building blocks and test complete datapath	6
5	ARM CPU with memory	Design and implement the controller building blocks - Instruction decoder, Flags check unit, Controller FSM, Control signal generator	7
		Integrate controller building blocks and test complete controller	8
		Integrate CPU (datapath + controller) with memory and test with small programs	9
6	ARM system with on-board devices	Introduce AHB-Lite bus in the design	10
		Interface on-board devices – switches and displays	11
7	ARM system with keyboard and monitor	Interface with PC through UART	12
		Test system operation through PC	13

Second Lab test will be in the 10th week. Final demonstration and the third Lab test will be in the 14th week.