Module 5: Computer Architecture Roadmap

coursera.org/learn/build-a-computer/supplement/7OOUn/module-5-computer-architecture-roadmap

In a nutshell: Let's recap the last four modules: we've built some elementary logic gates (module 1), and then used them to build an ALU (module 2) and a RAM (module 3). We then played with low-level programming (module 4), assuming that the overall computer is actually available. In this module we assemble all these building blocks into a general-purpose 16-bit computer called *Hack*. We will start by building the Hack Central Processing Unit (CPU), and we will then integrate the CPU with the RAM, creating a full-blown computer system capable of executing programs written in the Hack machine language.

Key concepts: Von Neumann and Harvard architectures, the stored program concept, fetch-execute cycle, data bus, instruction bus, CPU, computer design.

WATCH the module 5 lectures:

- Unit 5.1: Von Neumann Architecture
- Unit 5.2: The Fetch-Execute Cycle
- Unit 5.3: Central Processing Unit
- Unit 5.4: The Hack Computer
- Unit 5.5: Project 5 Overview
- Unit 5.6: Perspectives

DO:

- Project 5: Computer Architecture
- You should pack all the *.hdl files that you wrote as one zip file named project5.zip (pack the files themselves, don't put them inside any folders), and submit it. If you build helper chips that were not specified by the course, you should include them in the zip file. You have an unlimited number of submissions, and the grade will be the maximum of all your submissions, so you can't lose points by submitting again.
- If you are taking the course as an auditor, you can check your work yourself, using the tests described here. If you are taking the certificate option, submit your project zip file here.

GET HELP in the Module 5 Discussion Forum

BY THE WAY (and completely unrelated to this particular module): if you wish to stay in touch with future Nand to Tetris courses and activities, you can join the Nand to Tetris mailing list.