Report 5

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From the first design to the simulation on board I learnt many things. How a computer work, in another word how things organized in computer. Every single part is easy to achieve but the wiring may take more time. With this process, we got better understanding about the structure of the CPU which is much more deeper than just listening in the class.

In single cycle there are more problem about delay and clock, if the frequency is too high it may case many problems. Since the load instruction is need to first calculate the memory address, read it and then write to the register which is hard to achieve in one clock cycle. So we need to add nop if we need load instruction. So the time per instruction is much more longer which is not what we want. If we do it next time we can do something make it like fake multi-cycle so we can remarkably reduce the time per instruction.

If you start the project, the design should be carefully considered. At least the design should achieve all the instruction you wanted. And the control unit is very important in design, so decide how many control signal you want and you may like to give one or two in case you need more.

And when you design you may not take many practical trouble into consideration. Sometimes the program is working well in ModelSim but when you connected to the broad there may still be many problems. So more correction need to be done. To find the problem may need more patient to check up every incoming signal if it is right.

The most tricky problem we encounter is the register may keep write whatever the control unit is 1 or 0. So we give a Z when there is no need to write and give the address bus all Z so the register cannot be written.