1. Review textbook supplement material 4.13, located on Blackboard. Write 4 – 5 sentences about what you learned.

Answer: The first thing I learned after reading the chapter is the coding behind pipelining. Before this lesson and this chapter, I had never heard of pipelining. The code and logic for making pipelining possible is very in-depth and sometimes confusing to follow, so we take things like this for granted without knowing anything about it.

1. Review textbook supplement material 4.16, located on Blackboard. Write 4 – 5 sentences about what you learned.

Answer: Though the development of the first pipelining came in the sixties, it continued to be improved upon and designed well into the nineties and early two thousand’s. Also, that for processors to use ILP, the compliers used for coding for also need to progress. With these changing having happened rather recently, further research and development in these field may yield even better processes and advancement for architectural design of components.

1. Using information from the textbook Chapter 4, explain why a single-cycle implementation is not used today. Write 4 – 5 sentences about what you learned. (Page 271)

Answer: Single-cycle-implementation is not used today because of speed and effectiveness. With Single-cycle-implementation, any code or calculation that are run through must go on at a time. Mean the next calculation must wait until the one ahead is finished before it can be done. This leaves unused components in the CPU while other components are working on their part.

1. Using information from the textbook Chapter 4, explain pipelining and the benefits to today’s processors. Answer must include information about the speed-up achieved and overhead. Write 4 – 5 sentences about what you learned.

Answer: Pipelining basically solves the problem of single-cycle implementation. With pipelining, that unused hardware is put to use while one instruction is on it’s next calculation. One instruction is put through, as that instruction completes it’s first “stage” another instruction is put through. This allows multiple instructions to be worked on at one instead of one at a time. With that, calculation done by the CPU has the time taken to complete drastically reduced.

1. Using information from the textbook Chapter 4, explain why control units are needed in today’s processor. Write 4 – 5 sentences about what you learned.

Answer: Control Units are need in today’s processors due to complexity and design. Multiple functions are going on simultaneously instead the CPU. With that, that data and instruction sent through need to know where to go and how. Also it helps control the other unit’s and gates within the CPU for passing data through the correct passages.