

After his lecture you should be able to answer the following questions:

0. What is the symbolic representation of the Fetch-Execute cycle?
 1. What is Superscalar? How does it help speed up performance?
 2. What is Superpipeline? How does it help speed up performance?
 3. Explain In-Order Issue, In order completion; Explain In-Order Issue, Out-of-order completion; Out of order issue, out of order completion
What is the point of these three methods?
 4. What are True Data dependency, procedural dependency, resource conflicts, output dependency, and anti-dependency?
 5. What is machine parallelism?

Multiple choice questions (answers on the next page)

1. What is superscalar?
 - a. a few super instructions that can be initiated and executed independently
 - b. common instructions can be initiated and executed independently
 - c. common instructions must be executed in a dependent order
 - d. all instructions can only be initiated independently
2. What best describes Superpipeline?
 - a. one instruction per cycle
 - b. over lapping several instructions per clock cycle
 - c. over lapping several instructions per half clock cycle
 - d. a pipeline with a cache.
3. A true data dependency is when two instructions can't execute in parallel, because
 - a. the second instruction needs data produced by the first
 - b. both instructions need the same ALU
 - c. the processor needs register renaming
 - d. the register window is full.
4. Why do we need register renaming?
 - a. nobody liked R1 as a name.
 - b. It's needed for In-Order Issue, In order completion.
 - c. It eliminates resource conflicts in the ALU.
 - d. To prevent output and anti-dependency register conflicts.
5. Which best describes Out-of-order issue, out-of-order completion?
 - a. instructions are executed in the order the compiler wrote them.
 - b. instructions are fetched in decoupled, but executed in order.
 - c. the fetch and execute is decoupled, allowing the processor to look ahead.
 - d. Register renaming is not needed, because of the data dependency issues.
6. Machine parallelism does not include
 - a. in-order issue and out of order completion
 - b. duplicate resources
 - c. register renaming
 - d. out of order issue and completion

1. b 2. c 3. a 4. d 5. c 6. a