CS286-Computer Organization & Architecture
Possible Quiz Questions (Quiz #8) on November 11th, 2026

The following is a list of possible questions for our quiz on November 11th. Some of the questions will not be asked in the quiz. All the questions that will appear in the quiz will appear exactly as shown below (however, numeric parameters may be changed). The quiz is closed textbook, closed notes and closed neighbors. Note that the questions, which did not appear in this quiz, still may appear in the exams. You will find a solution for these questions during lectures.

#1: What are "static code optimizations"?

#2: What are "dynamic code optimizations"?

#3: Which pipeline hazards is "delayed branches" effective for?

#4: What are the major advantages in "dynamic code optimizations"?

#5: What are the major disadvantages in "dynamic code optimizations"?

#6: How does "forwarding" work? Is the code optimization considered "a static code optimization" or "a dynamic code optimization" (attach your brief justification for the choice you are making for this question)?

#7: What are the major disadvantages (mention at least two) of forwarding?

#8: What is the major advantage of forwarding?

#9: How does "instruction scheduling (code optimizations) by a compiler" is performed?

#10: What is the major advantage of "instruction scheduling (code optimizations) by a compiler"?

#11: What is the major disadvantage of "instruction scheduling (code optimizations) by a compiler"?

#12: How does "delayed branch" works? Is the code optimization considered "a static code optimization" or "a dynamic code optimization" (attach your brief justification for the choice you are making for this question)?

#13: What is the major advantage of "delayed branch"?

#14: What is the major disadvantage of "delayed branch"?

#15: What is the major issue about "memory subsystem?

#16: What is “memory hierarchy”?

#17: Why was “memory hierarchy” invented?

#18: What is “external (memory) fragmentation”?

#19: Why is “external (memory) fragmentation” a big problem for computer systems?

#20: What is “memory compaction”?

#21: Why isn’t “memory compaction” an effective solution to deal with external fragmentation?

#22: What is “memory paging”?

#23: What is “virtual memory”?

#24: Why is “virtual memory” an effective solution to eliminate “external fragmentation”?

#25: What is “page fault” (make sure to answer this question using the appropriate technical term(s) the CS286 lectures already covered)?

#26: What is “valid flag” used in virtual memory for?

#27: Sketch the contents in VMT (virtual memory table).

#28: What is the primary problem in virtual memory?

#29: How is “dirty flag” used in virtual memory for (also explain its primary purpose)?

#30: What is “demand paging”? What is the primary advantage?

#31: What are the primary advantages in using “virtual memory (using demand paging)”? Mention at least three different advantages in using “virtual memory”.