

2008 Paper 8 Question 5

Comparative Architectures

- (a) Why is it important to concentrate on improving the common case (e.g. the most commonly used operations and resources) when designing a microprocessor? [4 marks]
- (b) What is the major difference between a very long instruction word (VLIW) processor and a dynamically-scheduled superscalar processor? What impact does this have on the complexity of the implementation in each case? [4 marks]
- (c) When designing a VLIW processor, why might variable-length instruction bundles be preferred over fixed-length instructions? [4 marks]
- (d) Some VLIW processors contain additional hardware to permit memory reference speculation.
- (i) What optimisation does memory reference speculation permit? [4 marks]
- (ii) Briefly describe the additional hardware required to support this type of speculation. [4 marks]