2000 Paper 7 Question 3

Comparative Architectures

Describe the characteristic features of a VLIW (Very Long Instruction Word) processor architecture. [3 marks]

VLIW processors aim to achieve high execution throughput using a different strategy from that of out-of-order dynamic execution RISC implementations. Compare and contrast these different approaches, pointing out the advantages and disadvantages of each strategy in achieving this goal.

You may wish to consider the following issues:

- instruction issue logic

- cache sizes

- compiler code generation

- execution unit utilisation

[9 marks]

Why have VLIW architectures traditionally been used only for special-purpose applications such as Digital Signal Processors? [3 marks]

What techniques have been developed to make VLIW-like architectures more suitable for general-purpose use? [5 marks]