



4.7.3.7 Processor Performance

- 1) One method that can be used to improve the performance of a processor is to increase the amount of cache memory.

Describe:

- What cache memory is
- What cache memory is used for
- How increasing the amount of cache memory can improve the performance of a processor

[4 marks]

What cache memory is (max 1 mark)

- Memory located on the processor
- Memory with very faster access speed

What cache memory is used of (max 1 mark)

- To store the most frequently used // most recently used instructions

How more cache memory improves performance (max 2 marks)

- More instructions/data can be stored in the cache
 - Instructions/data in the cache can be accessed more quickly than instructions/data in main memory
 - This increase the probability that a particular instruction/data item is in the cache when fetched // fewer fetches from main memory
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2) The fetch-execute cycle is used to carry out machine code instructions.

Describe how could the hardware of a computer be improved so that programs can be executed more quickly.

[4 marks]

- Replace the processor with one which has more cores
 - Replace the processor with one which has more cache memory // increase the amount of cache memory // add cache memory
 - Increase the clock speed of the processor // replace the processor with one which runs at a faster clock speed
 - Use a parallel processor architecture
 - Use a processor with a bigger word size
 - Use a processor that makes (better) use of pipelining
 - Install more RAM
 - Use RAM with faster access times
 - Replace the motherboard with one which has buses which run at higher clock speed
 - Replace the motherboard with one which has more lines in the data bus
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