OCR Computer Science A Level

1.1.2 Types of Processor

Intermediate Notes

Specification:

1.1.2 a)

- RISC Processors
- CISC Processors
- The difference between RISC and CISC

1.1.2 b)

- GPUs and their uses

1.1.2 c)

- Multicore Systems
- Parallel Systems

RISC and CISC processors

Reduced Instruction Set Computers (RISC)

In these processors, there is a small instruction set. Each instruction is approximately one line of machine code and takes one clock cycle.

Complex Instruction Set Computers (CISC)

In these processors there is a large instruction set. The aim is to try and accomplish tasks in as few lines of assembly code as possible. These instructions are built into the hardware. Early on these processors were used as the standard, however with time they got replaced by RISC design. Now they are used more in microcontrollers and embedded systems.

Comparison between RISC and CISC

RISC Processors	CISC Processors
The compiler has to do more work to translate high level code into machine code.	The compiler has less work to translate high level code into machine code.
More RAM is required to store the code.	Less RAM is required since code is shorter.
Pipelining is possible since each instruction takes one clock cycle.	Many specialised instructions are made, even though only a few of them are used.

A-Level only

Graphics Processing Unit (GPU)

A graphics processing unit (GPU) is a co-processor which has lots of independent processors working in parallel making it very efficient at tasks such as image processing, and machine learning.

Multi-core and Parallel Systems

Multi-core CPUs have multiple independent cores that can complete instructions separately which results in higher performance. Parallel systems accomplish a similar task however instead of requiring multiple cores they can complete tasks with a single core, by using threading. Overall, in larger projects, multi-core systems perform better than parallel systems.