

# 1.1.2

## **TYPES OF PROCESSOR**

### **TOPIC WISE EXAM QUESTIONS**

**A-LEVEL**

**OCR**

### 1.1.2 Types of processor

- a) The differences between, and uses of, CISC and RISC processors.
- b) GPUs and their uses (including those not related to graphics).
- c) Multicore and Parallel systems.

Candidates need to understand the differences between the CISC and RISC processors and the key features and benefits of each. They should be aware of the relative benefits of each architecture.

Candidates need to understand the purpose of GPUs and what applications they are used for (candidates need to understand how GPUs are used to aid graphics, but also other applications for example their use in modeling, data mining, etc.). Candidates should understand the benefits and using GPUs and why they are suited to certain tasks (specialist instructions, multiple cores and SIMD processing).

Candidates need to understand what is meant by a parallel system and the benefits and limitations of parallel processing.

Candidates need to understand that parallel processing can be achieved through different methods (i.e. multiple processors in the same computer or distributed across multiple cores in a CPU or GPU).

Candidates need to understand the benefits of a multicore system in terms of parallel processing and running multiple programs at the same time.

- 1 OCRSystems are designing a new CPU for a computer system that will be used for video rendering. Part of the video rendering process is when the video is exported. This is when the computer combines all of the separate video elements together to form the final video.
- (b) An important design consideration is whether OCRSystems use a CISC processor type or a RISC processor type.

Describe **one** difference between a CISC processor and a RISC processor.

.....

.....

.....

..... [2]

- (c) OCRSystems are considering using parallel processing in the computer system that will be used for video rendering.

Describe how parallel processing would increase the performance of this computer system.

.....

.....

.....

.....

.....

..... [3]

(e)\* The charity has several desktop computers in their office that use a CISC processor. They are considering buying mobile devices for their staff to use when they are not in the office.

Discuss whether these mobile devices should use the same CISC processors that are used in their desktop computers or if they should use a RISC processor instead.

You should include the following in your answer:

- the difference between each processor type
- the suitability of each processor type for mobile devices.

[12]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

2021

1 OCR Insurance uses a computer system to calculate the price that customers pay for car insurance.

(iii) Describe **one** non-graphical use OCR Insurance may have for a GPU.

.....

.....

.....

..... [2]

2020

AS - Level

6 (c) CPUs can be designed to take a Complex Instruction Set Computer (CISC) or a Reduced Instruction Set Computer (RISC) approach.

Describe **one** difference between CISC and RISC.

.....

.....

.....

..... [2]

2 (iii) Explain why using a RISC processor rather than a CISC processor is likely to result in increased battery life.

.....

.....

.....

.....

.....

.....

..... [3]

### AS - Level

1 A company produces digital photo frames (i.e. photo frames that display digital photographs).

(c) The photo frame has a RISC processor.

Describe **one** advantage to the company of using a RISC processor, rather than a CISC processor.

.....

.....

.....

..... [2]

1 An architect firm specialises in designing skyscrapers.

(a) The firm uses high end computers with high performance CPUs, GPUs and large amounts of RAM.

(i) Give **one** use the firm might have for GPUs.

.....

..... [1]

2. A gaming company decides to release a new video games console. The console will use a modified version of an operating system called Linux.

As well as a CPU the console contains a GPU for 3D graphics. Explain why a GPU is more suitable than a CPU for this task.

---

---

---

---

---

---

---

---

---

---

[3]

3. \*Some problems require a large amount of computing power that goes well beyond a single CPU.

Discuss the different approaches that can be taken to provide increasingly larger amounts of computing power and the types of problem they are suited to. [12]

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

1(a).

- (i) Compare a Complex Instruction Set Computer (CISC) architecture with a Reduced Instruction Set Computer (RISC) architecture.

-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----

[4]

- (ii) Explain **one** advantage, other than cost, of RISC compared with CISC.

-----  
-----  
-----  
-----

[2]

Explain the effect of using a co-processor system for each of the following applications.

- (i) Complex calculations for scientific research.

-----  
-----  
-----  
-----

[2]

- (ii) Printing personalised letters to customers for an advertising campaign.

-----  
-----  
-----  
-----

[2]

2. Von Neumann and array processor are different types of computer architecture.

One feature of Von Neumann architecture is that instructions are executed in a linear sequence.

(i) Give **three** other features.

1

-----  
-----

2

-----  
-----

3

-----  
-----

[3]

3(a). A computer uses a Von Neumann processor.

RISC and CISC are types of processor architecture.

Describe the differences between the **two** architectures.

-----  
-----  
-----  
-----  
-----  
-----  
-----  
-----

[4]

(b). Describe the fetch-decode-execute cycle that this architecture uses.

Fetch -----

-----

Decode -----

-----

Execute -----

-----

**If you found this  
useful, drop a follow  
to help me out!**

**THANK YOU!**

**GCST**