FPGA Computing Systems :
Background Knowledge & Introductory Materials

Quiz Answers

Week 3 : Module Review

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1. To discuss about reconfigurable architectures, we need to agree on a precise vocabulary: what is the difference between a CORE and an IP-CORE?

They are usually used as synonyms.

A CORE is the generic implementation of a functionality, while an IP-CORE is an implementation built specifically for FPGAs.

A CORE is the generic implementation of a specific functionality, while an IP-CORE is a proprietary implementation sold by a given manufacturer.

A CORE is the implementation of a specific functionality, while an IP-CORE is a core built with an hardware description language, together with its communication infrastructure.

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2. A board can be reconfigured at small-bits granularity and at module-based granularity. Which of the following statements are true?

Only small-bits can be done at runtime, while module-based reconfiguration is purely static.

Module-based reconfigures large portions of the FPGA, by creating hardware components.

Module-based can also be performed by a host machine, while small-bits works only for internal reconfigurations.

Small-bits operates on single portions of the design, such as single logic block.

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3. What are the main advantages of Hardware-Software codesign?

With HW-SW codesign, hardware experts can focus only on hardware, while software experts can focus on software development, without the need of collaboration.

HW-SW codesign allows easier reconfiguration of system functionalities, even if they are already in production.

The HW-SW codesign offers a system-level view in order to reduce development costs and time-to-market.

HW-SW codesign can be applied exclusively to FPGAs.

4. What is the difference between EMBEDDED and INTERNAL reconfigurations?

They are the same thing.

EMBEDDED doesn't require the computation to be stopped, while INTERNAL does.

EMBEDDED requires a specific controller on the board to take place, while INTERNAL can be done purely through software.

Both happens without the need of an external host, but in EMBEDDED reconfiguration only a small portion of the board can be reconfigured, while INTERNAL allows to reconfigure the entire board.

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5. Thing about a system with 3 FPGAs and a host machine. In this system, one of the FPGAs has to be completely reconfigured. Which of the following sentences is true with respect to this scenario?

The configuration is COMPLETE with respect to the single FPGA, but PARTIAL from a system-level point of view.

If the reconfiguration of the FPGA doesn't require the computation to stop on the other machines, it can be considered DYNAMIC from a system-level point of view, and STATIC from the single FPGA point of view.

The reconfiguration of the FPGA can be considered INTERNAL from a system-level point of view if it is performed by another FPGA.
