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Student No:

Computer Engineering Department
Second Exam, Second Semester: 2010/2011

Course Title: Advanced Computer Architecture
Course No: 0630561
Instructor: Prof. Kasim Al-Aubidy

Date: 4/5/2011
Time Allowed: 1 hour
No. of Pages: 2

QUESTION ONE: [40%]

RISC Characteristics

[A]. Distinguish between multiprocessors and multicomputers based on given factors?

Factor	Multiprocessors	Multicomputers
Structure		
Resource Sharing		
Interconnection		
General Layout		

[B]. Compare the **UMA** models with **NUMA** models of a shared-memory multiprocessor? Give the general layout and features of each model?

QUESTION TWO:

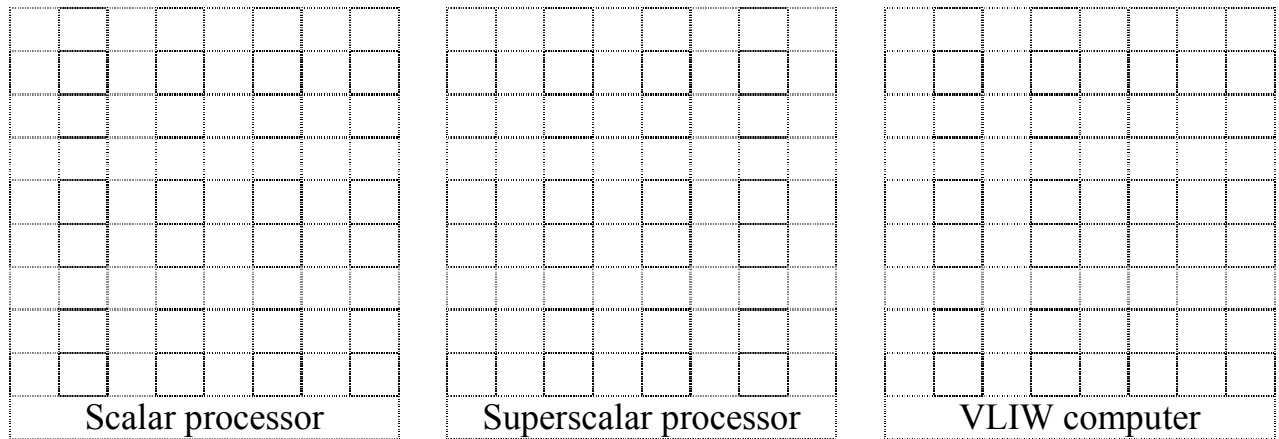
[60%]

Superscalar Architecture

An instruction cycle is divided into **FOUR** suboperations and implemented in **FOUR** segments: Fetch (**FI**), Decode (**DI**), Execute (**EX**) and WritBack (**WB**). A program has **100** instructions is to be executed by **TWO** different architectures;

1. Scalar processor.
2. Superscalar processor of degree **m=3**
3. VLIW computer with super scalar architecture of degree **m=3**.

[A]. Draw the timing diagram of instruction pipeline for the above computers?



[B]. Calculate the number of clock cycles required to execute the same program for the above computers?

[C]. Determine the speed up factor for each system?