HPCA Assignments

ASSIGNMENT -1

1. How computer architectures are classified according to instruction streams and data streams.
2. What are vector processors, draw and explain Cray-1 architecture, state characteristics of Cray-1
3. With a block diagram explain the concept of linear pipelining, and how pipeline architectures are classified.
4. How the performance of pipeline computers is measured? state and explain various pipeline architecture performance measures.
5. What are the development tracks in HPCA ?
6. What are the applications of parallel architectures?
7. What are the different hazards in pipeline architectures?
8. A 40-MHz processor was used to execute a benchmark program with the following instruction mix and clock cycle counts:

Instruction type	Instruction count	Clock cycle count
Integer arithmetic	45000	1
Data transfer	32000	2
Floating point	15000	2
Control Transfer	8000	2

   Determine the effective CPI, MIPS rate, and execution time for this program.

9. Explain how instruction set, compiler technology, CPU implementation and control, and cache and memory hierarchy affect the CPU performance and justify the effects in terms of program length, clock rate, and effective CPI.

ASSIGNMENT -2

1. Why associative memories are called as contents addressable memories ? explain
2. Draw the architecture of associative memory array , what is Bij ? How associative memory works ?
3. Draw asn explain Scalable coherent multiprocessor model with distributed shared memory, Why it is called as DASH architecture ?
4. Explain concept of multithreading in parallel architectures

ASSIGNMENT -3

1. What is difference between multiprocessor and multiple computer system? What are advantages of loosely coupled architecture over tightly coupled architectures?
2. Draw and explain Cm* architecture . What is Kmap ? explain function of Kmap.
3. How intracluster communication takes place in Cm* architecture
4. Draw and explain tightly coupled architecture , state its advantages over loosely coupled architectures.

ASSIGNMENT -4

1. What are Dataflow Architectures?
2. Compare between data flow computing and traditional computing
3. Draw and explain static and dynamic dataflow architectures.
4. what are Dataflow operators? State data flow language properties.

ASSIGNMENT -5

1. What are Parallel programming models?
2. How parallel languages and compilers are different from traditional one
3. How code optimization and scheduling is done in parallel architecture

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