Tutorial No 1

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King Saud University
College of Computer and Information Sciences
Department of Computer Science
CSC453 – Parallel Processing – Tutorial No 1 – Fall 2021

Question 1

1. Give the definition of Parallel computing and Parallel Programming
2. Enumerate and give a brief description of the main opportunities of parallelism. Give examples
3. Enumerate and give a brief description of the main aspects of parallel computing.
4. What are the main differences between Distributed and Parallel Computing.

1

1) Parallel computing:
is a form of computation in which many caculations are carried out simultaneously.

parallel programming:
Decomposing a programming problem into tasks and deploy these tasks and run them on different processors simultaneously.

2) instruction level parallelism:

- the ability that the compiler produce so the statement can be splited into fragments that will be processed in parallel.

* single computer level:
- multi-core computers:
chip multi-processors
  * Dual-core, Quad-core, GP-GPU
- multi-processor computers:
symmetric multi-processors
  * super-computers

* multiple computer level:
- clusters, servers, Grid computing

cluster Vs Grid

3) * Parallel computers Architecture
It consern a specification and design of computer architecture that allow or enable parallelism to support multible processors enabling parallel computing

* Algorithms and application
increase the performance of a application by applying principle of parallel computing such as sorting

* parallel programming
- paradigms
- programming languages
- Frameworks
- Dedicated environment

4) Distributing computing:
- necessary autonumous(not necessary exist on the same device)
- increase system availability
- each processor will do the whole task

Parallel computing: not necessary autonumous (not necessary exist on the same device)
- increase system performance
- High interaction low load
- split task