King Saud University
College of Computer and Information Sciences
Department of Computer Science
CSC453 – Parallel Processing – Tutorial No 2 – Quarter 3 2023

Question

1. Give the flynn's classification of computers.

2. Use an example to explain the differences between the ***SIMD*** and ***MIMD*** computers.

3. Explain the main differences between the **Blocking non-buffered** and the **Non-Blocking non-buffered** send/receive operations of the message passing paradigm.

4. Let's consider that a root process has N-1 child processes. Let's consider that the root process has an array called ***Data*** of size N. Explain the following operations using the array Data.
   a. The root executes the operation ***broadcast*** of the message passing paradigm.
      $P_{i\,0..n-1}$ ← receive data[ ]
   b. The root executes the operation ***scatter*** of the message passing paradigm.
      $P_{i\,0..n-1}$ ← receive data[i]
   c. The root executes the operation ***gather*** of the message passing paradigm.
      $P_{i\,0}$ data[i] ← $P_{i\,0..n-1}$

5. Describe the ***Task Farming*** and the ***Divide-and-Conquer*** programming models and explain the main differences between them.

task farming: master and worker, master take problem and separate it into subtask to workers

divide-and-conquer:

subtakes can be different in task farming but in divide-and-conquer be to same subtask

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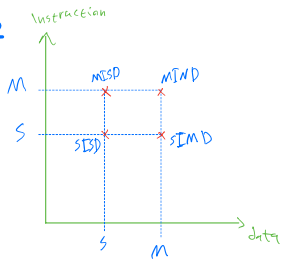
1. Give the flynn's classification of computers.

it's a classification that classified computer into two independent dimensions of instruction and data each of them have two possible state single or multiple



2. Use an example to explain the differences between the ***SIMD*** and ***MIMD*** computers.

SIMD:

single instruction: all processing unit execute same instruction at any clock cycle

multiple data: each process unit can operate on different data elemnt

ex:

MIMD:

mutiple instruction: every processor may be executing different instruction

multiple data: every processor can be operat on different data stream

ex:

3. Explain the main differences between the **Blocking non-buffered** and the **Non-Blocking non-buffered** send/receive operations of the message passing paradigm.

Blocking / non-buffered :