MONASH University

FIT3143 Tutorial Week 2

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SAMPLE SOLUTIONS

1. Estimate the maximum theoretical dual precision performance of your laptop (or lab workstation). HINT: This page may be of use (https://en.wikipedia.org/wiki/FLOPS).

   In lectures we saw P = N ×C ×F ×R My laptop is running a 2.3 GHz (R = 2.3 × 109) Intel i7, Haswell generation, giving me 16 dual precision ops per cycle (F = 16). I have a single laptop (N = 1), with a single CPU (C = 1). Putting these together my machine should be capable of P = 1×1×16×2.3×109 = 36.8 GFLOPS.

2. Compare tightly coupled system with loosely coupled system in the context of memory sharing.

   A tightly couple system is a single system wide address space shared by all the processors. In loosely coupled system each processor has it's own memory.

3. Discuss the distributed systems advantage of reliability in the context of distributed storage.

   • If one node is lost not all data is lost.
   • If one node fails the remaining nodes can still serve data requests.
   • In the case of redundant storage (i.e. multiple copies) when one node fails the system can continue to operate as normal.

4. Compare your response above to the disadvantage of failure handling.

   • Large amount of hardware increases the likelihood of failure.
   • The point above about redundant storage is implemented exactly for this reason.
   • Systems must be dynamic / flexible to be able to handle failures in a robust way.