

CSCI-GA.3033-009
Multicore Processors: Architecture & Programming
Homework Assignment 1

1. [3] There are several types of parallelism. What are they? For each one, specify whether exploiting that type needs programmer involvement or the hardware is enough to exploit it.

2. Multiprocessor systems have been around for several decades now. This means we should already have good experience dealing with parallel systems. Yet, we are facing challenges dealing with multicore processors.
 - a) [2] List all the differences you can think of between traditional multiprocessor systems and the current multicore processors.
 - b) [1] List one or more cases where our expertise with traditional multiprocessor systems is helpful in dealing with multicore processors.
 - c) [1] List one or more cases where our expertise with traditional multiprocessor systems is NOT helpful in dealing with multicore processors.

3. [2] What do you think are the factors that can make an application very hard (or sometimes impossible) to parallelize?

4. [1] If you are given a sequential program that you are required to parallelize, first you need to find the parts that are *parallelizable*. However, in some cases, it is not worth it to parallelize those parts, why?