Problem 1

a) Multi-core processors are being used in order to increase throughput. Improving single-core processors are becoming harder
and harder, and they are not improving fast enough for the ever growing demand for more computation power. While multi-core processors
don't necessarily improve respons time, it does increase throughput by computing different computations in parallel.

b) SISD: Single instruction single data. A single processor executes one instruction at a time from a single data stream.

SIMD: Single instruction multiple data. Multiple processors executes the same instructions on different data streams.

MISD: Multiple instruction single data. Multiple processors executes different instructions on the same data.

MIMD: Multiple instruction multiple data. Multiple processors executes different instructions on different data.

SPMD: Single program multiple data. A program is divided into several lesser tasks that are executes in parallel on multiple
processors.

c) In a distrubuted-memory system each processor has its own local memory, which it can use for computations. If it requires remote data it has to communicate with the other processors (and their memory) by sending messages over a network. Thus making it harder to keep the data synchronized. In constrast, in a shared-memory system all the processors access the same memory, making both communication and data synchronization much easier.