

Instructor Guide

Basic definitions as shown in the slides:

Sequential programming: Writing programs that run one instruction at a time (one after the other) on a single-core, single-CPU machine

Parallel programming: the simultaneous use of more than one compute resource to solve a computational problem

Single-core computer: a computer with a single CPU, which itself has a single compute core (only runs a single instruction at a time)

Multicore computer: a computer with more than one compute core (each core can run one instruction at a time).

Supercomputer: a computer with a high level of performance as compared to a general-purpose computer (PC)

High Performance Computing: the use of supercomputers and parallel programming toward the goal of solving complex computational problems

The instructor gives a flipped assignment for the students to watch at least 35 minutes of the video before the class and the rest 25 minutes in the class discussion or after the class.

It is recommended to spend some time navigating around the <https://www.top500.org> website to familiarize yourself with it before showing it to students. It is also worth showing them the top “green” computers, which the list can also be found there. There is a lot of information to be found there, and it is probably worth revisiting in a later lesson as students learn more about HPC architecture.

Common Pitfalls for Students and Instructors

No pitfalls are expected with this lesson.