# Learning Goals

Class 1

(1) Describe computational thinking

(1) Become acquainted with some CT building blocks (namely, algorithm, abstraction, decomposition) by developing a sorting algorithm

(1) CT Building Block: Students will be able to define the difference between hardware, applications, and the operating system.

(2) CT Building Block: Students will be able to give examples of a problem for which there are different algorithms, give examples of cases where one algorithm works better than the other, and reason about which algorithm is likely to work better overall.

(4) CT Building Block: Students will be able to evaluate and compare algorithms in terms of its efficiency (time and space requirements).

(3) [CT Building Block] Discuss the difference between high level, assembly and machine code.

(1) [CT Building Block] Explain what a variable is in the context of computer programming.

(6) [CT Building Block] Be able to trace through code using sequences of instructions, variables, loops, and conditional statements in short programs specified in a visual programming language such as Snap, or in other clearly expressed processes (which may or may not be computer related)

(1) CT Building Block: Students will be able to explain examples of how computers do what they are programmed to do, rather than what their designers want them to do.

(2) CT Impact: Students will be able to list reasons that an algorithm might be biased and what its impact will be.

(1) CT Impact: students will be able to list arguments why a company should or should not change its algorithms based on “fairness”

In the future need a learning goal about writing algorithms as well.

Explain how high level languages end up in a form a pcomputer understands.