

Lesson #15-16: Sorting

Overview

Computers are often used to put lists into some sort of order, for example names into alphabetical order, appointments or e-mail by date, or items in numerical order.

In this activity children will discover different methods for sorting, and see how a clever method can perform the task much more quickly than a simple one.

Lesson Summary

- Journal - List examples of where it matters whether items are in order (sorted)
 - Think (1 min), Pair (1 min), Share (2 mins)
- Assigning Group Roles
 - Data Collector / Presenter
 - Human Scale Master
 - Taskmaster
- Mini-Activity (10 min) - Find the lightest weight.
 - You can only compare two at a time.
 - What is the minimum number of comparisons you must make to know you have the lightest one?
 - Share out your findings
- Main Activity - Sort all items from lightest to heaviest using only two at a time.
 - Tally the number of comparisons
 - What was your process to put them in order?
 - Groups share out their process
 - What seems to be the easiest way of doing this?
 - Why will this not always be efficient - Selection sort
- Extension (15 mins)
 - Video
 - Quick sort - Mix all the bags up, as you sort your bags, tally the number of comparisons you are making.
- Method & Number of Comparisons
 - Group Discussion/ Share out on the results and what that means for larger sets of data.
 - How easy would it be to sort 20 bags by hand? 50? 100?
 - Major advantage of computing -
- Reflections
 - Using your peer's comments and questions, how can we improve the

Objectives

Students will be able to:

- define sorted and unsorted lists
- describe various sorting algorithms
- compare various sorting algorithms

Materials and Prep

- journal
- set of 8 containers of same size but different weight for each group
- Balance if possible
- Worksheet

Resources

Student Documents

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Code Studio

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Video

- [Sorting Algorithms](#)

Assessments

- Reflection Questions

Notes

process to make it more efficient? Then actually modify your process to make it clearer and more efficient.

- What effect did different methods have in sorting bags efficiently? How would this apply to larger sets of data? (After going over selection sort and quicksort)

CS Content

Students are asked to work through the problem solving process to apply abstractions and models to the task at hand. And by doing that they are simulating one of the ways in which a computer sorts things. They also get to see how algorithms make things work much more smoothly and quickly than would otherwise.