

# Introduction to Sorting

## Topic 21

"The founders put some brains in me  
So I could choose instead!  
Now slip me snug about your ears,  
I've never yet been wrong,  
I'll have a look inside your mind  
And tell where you belong!"

-The Sorting Hat,  
*Harry Potter and  
the Goblet of Fire*



Based on slides for Building Java Programs by Reges/Stepp, found at  
<http://faculty.washington.edu/stepp/book/>

# Sorting

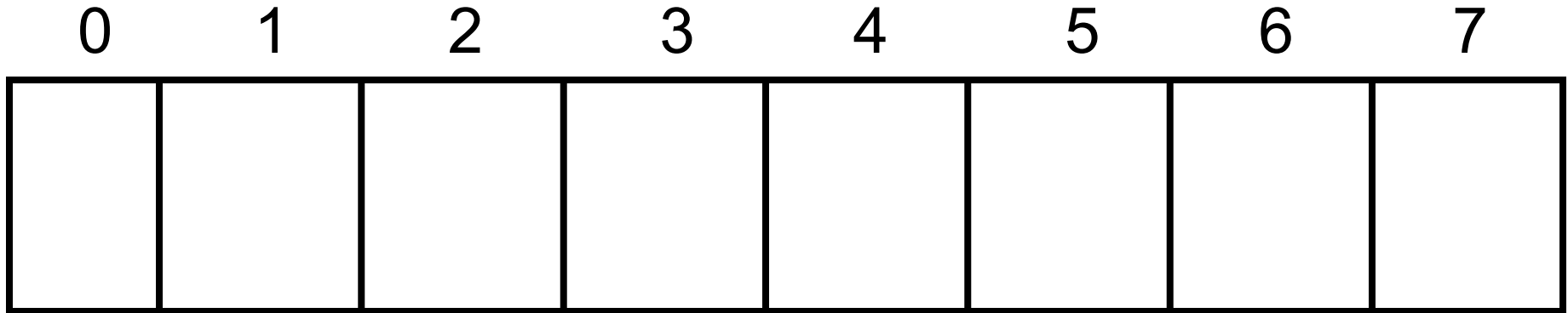
- ▶ A fundamental application of computer's
- ▶ Sorting data is done to make it easier to find things later
  - either easier for the computer or easier for humans
- ▶ Many different algorithms and techniques for sorting data
  - [en.wikipedia.org/wiki/Sorting\\_algorithm](https://en.wikipedia.org/wiki/Sorting_algorithm)
  - [en.wikipedia.org/wiki/Category:Sort\\_algorithms](https://en.wikipedia.org/wiki/Category:Sort_algorithms)
  - [www.nist.gov/dads/HTML/sort.html](http://www.nist.gov/dads/HTML/sort.html)

# Sorting

- ▶ Canonical sort problem in a language like Java.
  - given an array of ints, sort them.
  - done to focus on the algorithm
  - usually the ints are the key and data is attached to them
  - **key**: a piece of data used to sort a larger collection of data
  - example: student information: key could be name, uteid, email address

# Sorting Demo

► Why is this hard?



# Sorting

0	1	2	3	4	5	6	7
18	29	12	37	5	-3	17	7

# One Sorting Algorithm

- ▶ Selection Sort
- ▶ One of the simplest sorts to understand and implement.
- ▶ As described at Wikipedia:
  1. find the minimum value in the list
  2. swap it with the value in the first position
  3. sort the remainder of the list (excluding the first value)