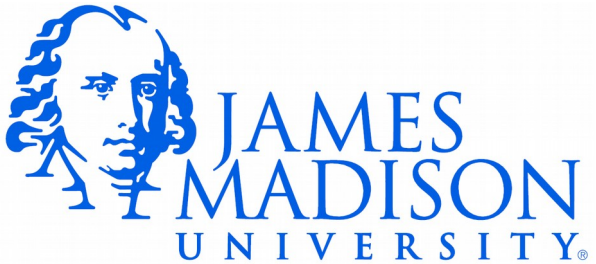
Welcome To CS139!



Introductions

- Me: Nathan Sprague
  - M/W lectures and lab for Sections 01 and 02
  - You can call me:
    - Dr. Sprague
    - Professor Sprague
    - Nathan (doesn't bother me, but *not* standard practice in this department.)

- Alvin Chao
  - Lab for section 03

Card Sorting - Part 1/3 (5-6 minutes)

- Find a partner (3 people OK)
- Shuffle cards
- Arrange cards face down in a row
- Player A may not look at the cards!
  - May ask player B, “is this card greater than this card?”
  - May tell player B, “swap these two cards”
  - May tell player B to “mark” a card by pushing it out of line
  - Declare “done”, at which time player B will reveal the cards
- Goal is to sort cards in increasing order.
- You may discuss strategy.

Card Sorting - Part 2/3 (5-10 minutes)

- Assume that Player A is about to be replaced with a friend that knows nothing about this game.
- Write a set of instructions that the friend can follow to sort the cards.
- The following *won't* work, but illustrates the idea:
  - Compare the first card to the last, swap if out of order.
  - Compare the second to the second-to the last, swap if out of order
  - Repeat this process until all cards have been compared.
  - Declare "done".

Card Sorting - Part 3/3 (5-6 minutes)

- Exchange instructions with another pair of students
- Shuffle the cards and attempt to follow the instructions

Results

- How did it go?

Algorithms

- There are many definitions.

  https://en.wikipedia.org/wiki/Algorithm_characterizations

- Mine:
  - A series of steps for solving some problem that are detailed and clear enough that anyone following them will produce the correct output, even if they have no understanding of what the steps are supposed to accomplish.

Programming Fundamentals

- This class is about programming
- Two parts:
  - Algorithm design – Creating a set of steps for solving some problem
  - Programming – Translating those steps into a language that a computer can execute
- We'll use Java

Programming Fundamentals

- Common elements of algorithms/programs:
  - Input/Output – Input comes from a user, results are reported to a user
  - Functions/Methods – Named set of instructions
  - Decisions – Some instructions only executed under certain conditions
  - Loops – Repetition of instructions
  - Variables – Named locations for storing values
  - Data Types – Categories of values that algorithms operate on "Card", "Integer" etc.
  - Operations – Manipulation of values based on their type. E.g. integers may be added together.
  - Arrays – A sequence of related objects

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- You'll need at least a B- in order to move on to CS159
- This is the first time I've taught this course
- Most information will be on the course web page:
  - https://w3.cs.jmu.edu/spragunr/CS139/

Great Ways to Make Me Angry!

- Play with electronic devices during class
- Pack up to leave before class is over

Homework

- ASAP:
  - Complete the course survey on the Canvas page
- Before 8:00AM Wednesday:
  - Complete the posted reading
  - Take the quiz on Canvas
- If you want:
  - Install Java (version 7) + jGRASP on your own computer.
  - Links can be found on the course web page:
    - https://w3.cs.jmu.edu/spragunr/CS139/supplement.shtml