Enrolled or on waitlist?

Welcome to

Not enrolled or on waitlist?

It is unlikely we can add many more seats, but you can request to join using this link: https://tinyurl.com/comp110waitlist

***Please wear a mask or keep a little distance if approaching me!**

Today's Goals

What is the course about?

What are the instructional and workload expectations?

Logistics?

Homework

An Introduction to Coding

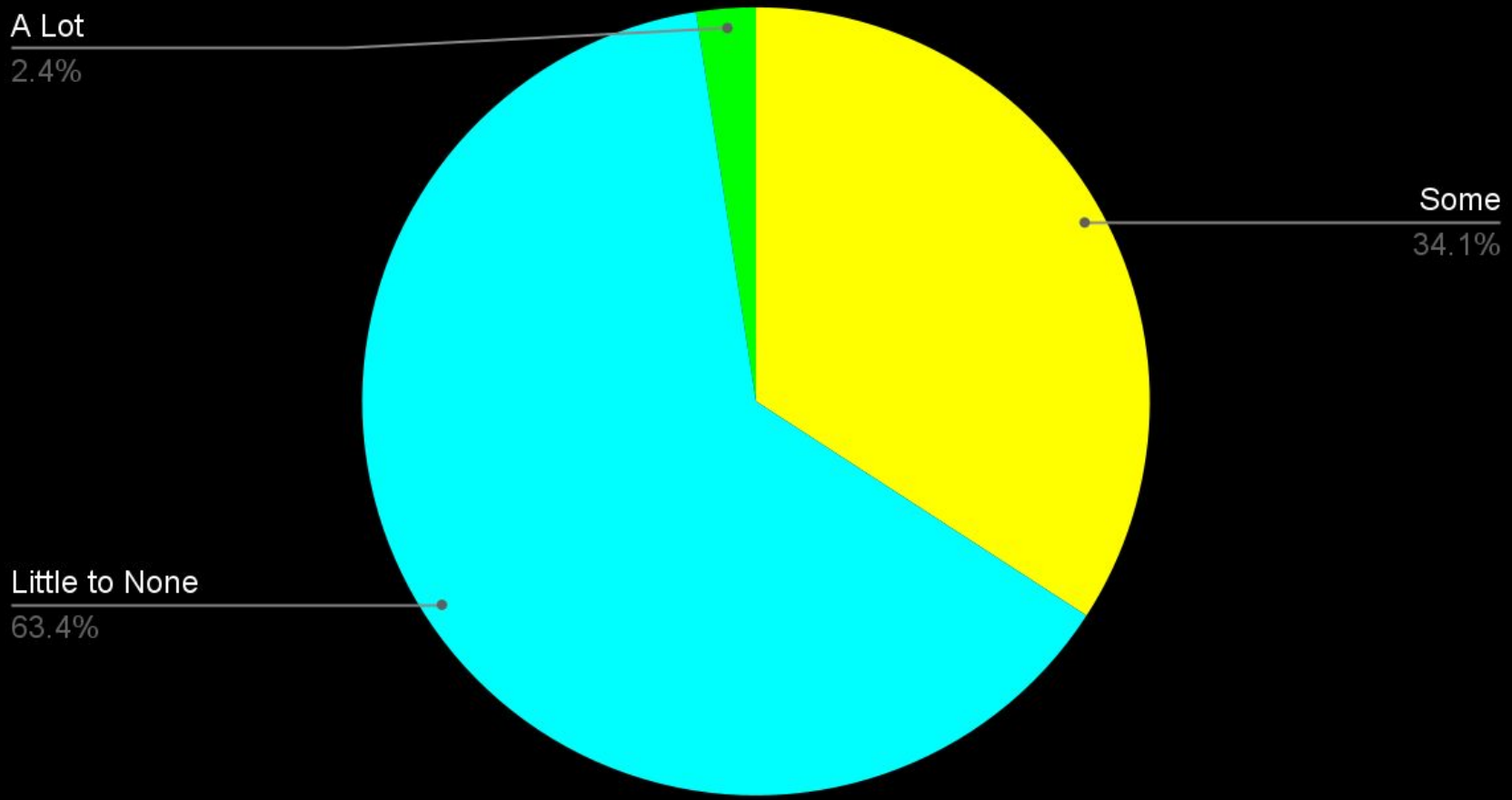
About me (Dr. Alyssa Lytle)

- Originally from Orlando, FL
- Married name Lytle
- PhD @ UNC 2022
- No coding experience until I took my first college class!

Your UTA Team!

- Your COMP110 UTA Team!
- This course would be **impossible** for all of us, if not for them.
- THE absolute best UTA team at Carolina. You will 💙 them.
- This team can do it all: they'll help teach you concepts you're struggling with, guide review sessions, study guides, generate lecture ideas, and build exercises.
- Drop-in, in-person office hours will be available to you for over 36 hours a week starting Monday!

TA Coding Experience Before Taking 110



Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who is a **freshman/sophomore**?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who is a **junior/senior+**?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who is **not an undergraduate student**?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who is coming into this course with ***no*** *programming experience*?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who is coming into this course with ***a little*** *programming experience*?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who is coming into this course with ***a lot*** *of programming experience*?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who **is *not*** planning to major in computer science?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

Who ***is*** planning to major in computer science?

Who else is in **COMP110** with you?

- Be prepared to stand/raise your hand if I call out an affinity group you belong to
- After peers stand, we'll *clap to celebrate their presence in the course*!

You are a **capable and diverse group**!

Zero Programming Experience Expected

- This course assumes *no* prior programming experience

(But some experience is OK!)

- COMP110 is a ***rigorous*** introduction to programming.
  - 3 hours of lecture/lessons per week
  - and ~9 hours of practice / course work

Course Objectives

- You will learn the **fundamentals of programming**
  - Using common tools and techniques used by software engineers
  - These concepts are universal and apply to nearly all programming languages
  - You will leave knowing what it feels like to be a programmer
- You will gain practice with **computational thinking**
  - **Thinking algorithmically** while breaking down problems step-by-step
  - Thinking at varying levels of **abstraction** by describing problems & solutions abstractly and precisely
- *Full curriculum linked in syllabus!*

Course Website

https://25f-comp110.github.io/

(Syllabus is on there!)

Grading Breakdown

- Prepare:
  - (LS) Lesson Responses: Mult. choice to learn basic concepts
- Practice:
  - (CQ) Challenge Questions: Short-form coding questions
  - (EX) Programming Exercises: Long-form coding projects
- Demonstrate Mastery:
  - (QZ) 5x Quizzes: Paper and pencil
  - (FN) Final Exam: Paper and pencil

Grading Breakdown

- Prepare:
  - 10% - (LS) Lesson Responses
- Practice:
  - 10% - (CQ) Challenge Questions
  - 30% - (EX) Programming Exercises
- Demonstrate Mastery:
  - 40% - (QZ) 5x Quizzes
  - 10% - (FN) Final Exam

Quizzes

Quizzes are ***in person***, pencil and paper, during your section's lecture time. You are only permitted to be absent for *one quiz*.

NO MAKEUPS!

All dates are online!
For full policies, see syllabus.

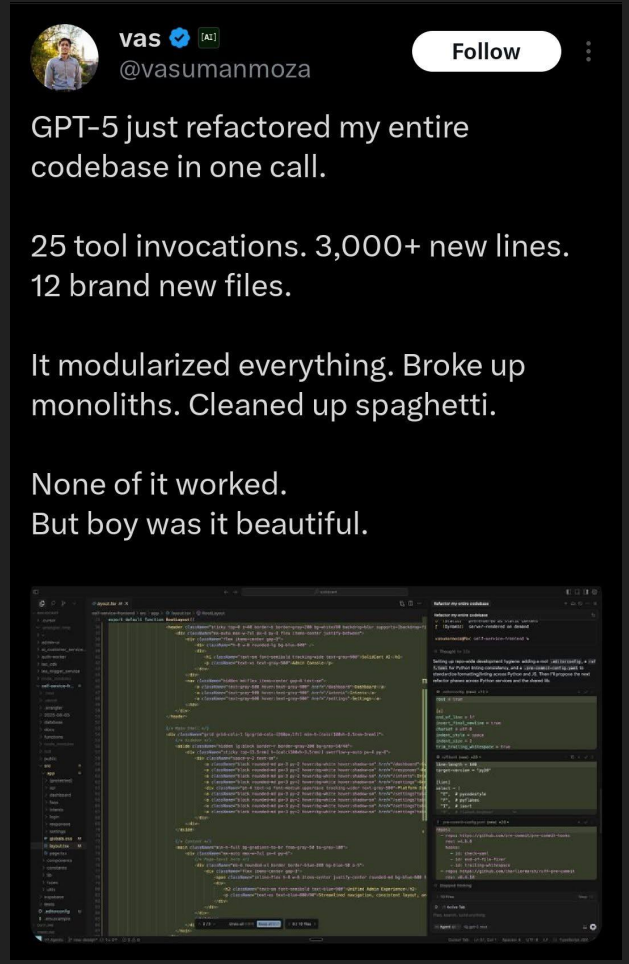
CQs, Exercises, + Autograding

- You can re-submit to the autograder without penalty before the due date
- If you do not get full credit - stop and think about what might be causing a test to fail. Try again!
- Be careful to avoid a frustrating loop of "tweak one small thing, resubmit, tweak one small thing, resubmit, ..."
  1. See if you can reproduce the error
  2. The autograder gives you feedback!
  3. If you find yourself stuck in this loop, stop by office hours.
- *“Brute-forcing” homework can hurt you in the long run!!!*

Programming is a Practiced Skill

- Like playing an instrument, painting, writing cursive letters, dancing, singing, sports, wood working, quilting, and so on.... **Time spent *individually practicing* is the key to success.**
- This is *very different* from courses that are knowledge-based!
- The team and I want you to succeed in learning how to program, so we structure everything we do toward helping you practice individually.
- *Know what every line of your code is doing!*

Use of AI


vas
[AI]
@vasumanmoza
Follow
GPT-5 just refactored my entire codebase in one call.
25 tool invocations. 3,000+ new lines.
12 brand new files.
It modularized everything. Broke up monoliths. Cleaned up spaghetti.
None of it worked.
But boy was it beautiful.

Use of AI

- AI tools like ChatGPT can be very useful in programming, but it takes a trained eye to use them properly!
- In this class, *you are training your eyes* to learn the fundamentals, so using AI will only hinder your understanding and won't strengthen you as a programmer!
- Considered a violation of the honor code.

How do *you* believe programming will be valuable toward achieving *your* personal goals?

Why are you in this course?

Think for a minute, introduce yourself to your neighbor(s) and discuss, then we'll share.

(In-Person) Open House Today and Tomorrow

- 1:30–3pm today
- Sitterson Hall (SN) - Go downstairs to SN008
- Get help installing course software!
- Introduce yourself and meet me!

Office Hours

- Official Office Hours begin Thursday, August 21
- Hours are on the website
- You will be signing in using the CSXL site! (link on support page)
- General Rules:
  - Must submit a ticket to be seen
  - Limited to 15 minutes and one specific question per appointment
  - Completely lost? *Try tutoring!*

Tutoring

- Times and locations on support page
- Just show up and get help
- Best for longer-form help and conceptual questions

Feedback + Help

Feedback is always welcome!

For help, you can email comp110help@gmail.com

An Introduction to Coding

Computational Thinking

- Strategic thought and problem-solving
- Can help perform a task better, faster, cheaper, etc.
- Examples:
  - Meal prepping
  - Making your class schedule
  - “Life Hacks”

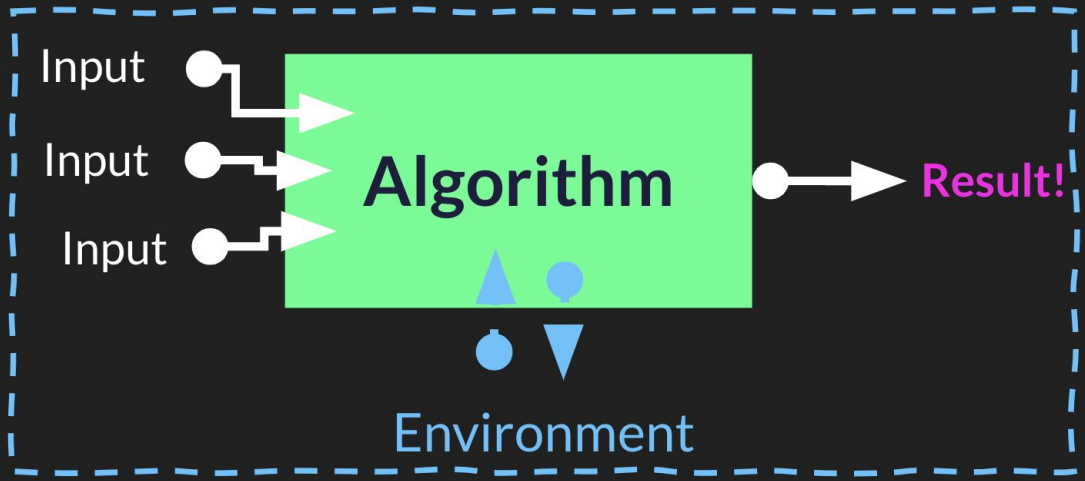
Algorithms

Input is data given to an algorithm

An **algorithm** is a series of steps

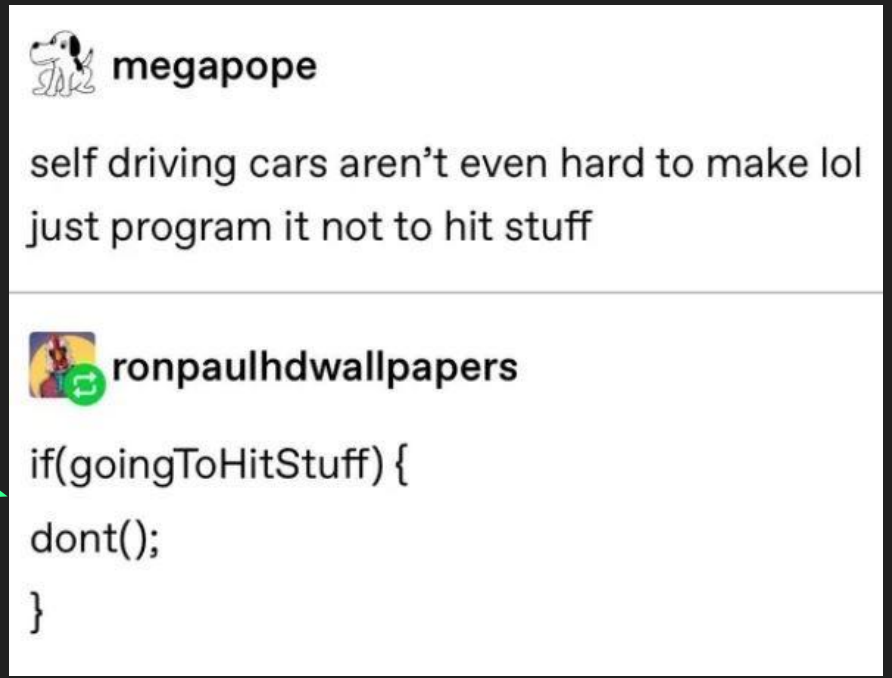
An algorithm **returns** some **result**

An algorithm *may* be influenced by its **environment** and it *may* produce side-effects which influence its environment.



Example: My dissertation

Algorithm



Discussion

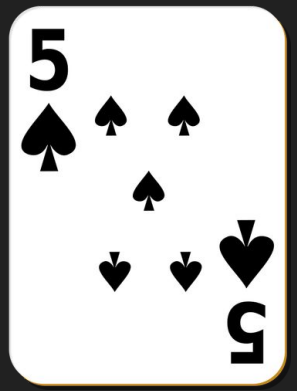
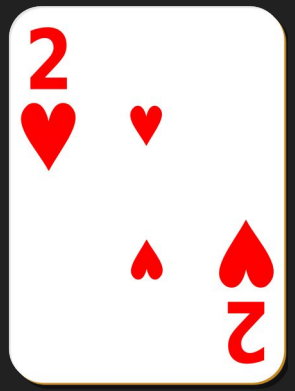
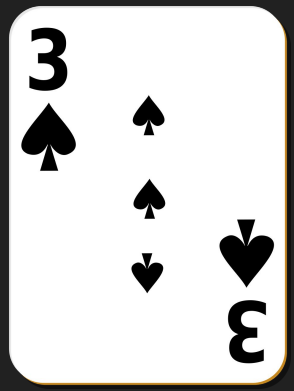
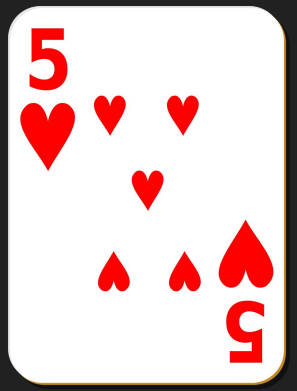
What are examples of computational thinking that you use day to day?

What kind of algorithms do you use to implement these ideas?

What is an algorithm?

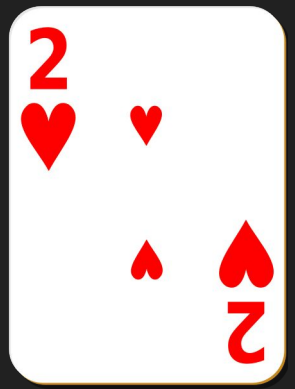
- A set of steps to solve a general problem
- Finite
- Can handle a problem of arbitrary size

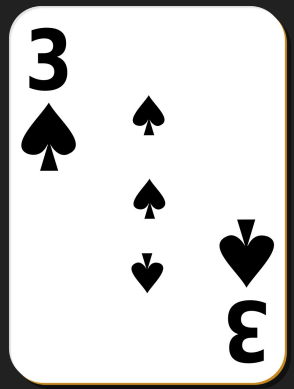
Finding the Lowest Card in a Deck

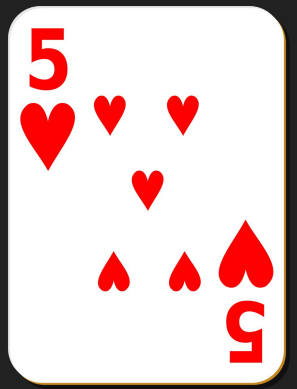





- Go from left to right
- Remember the lowest card you've seen *so far* and compare it to the next cards

Finding the Lowest Card







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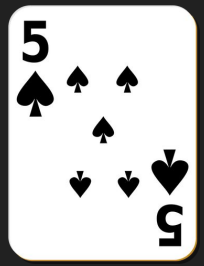

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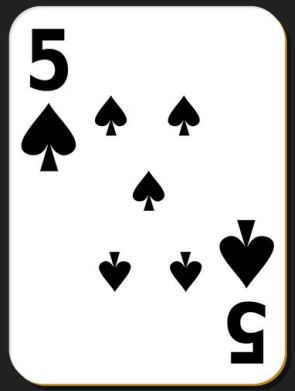

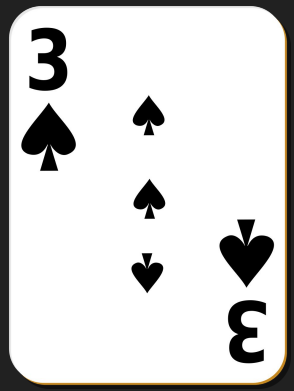

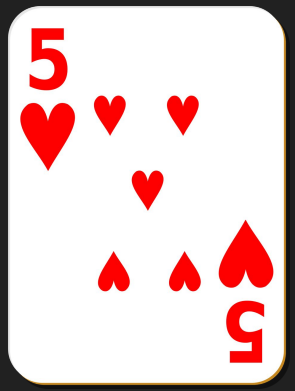

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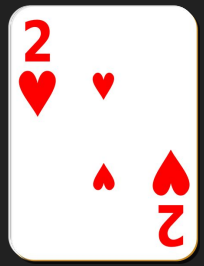

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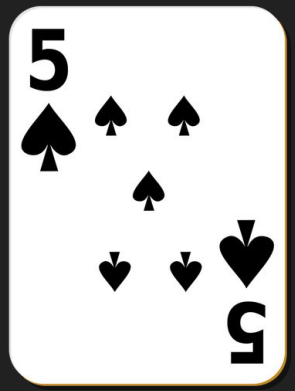

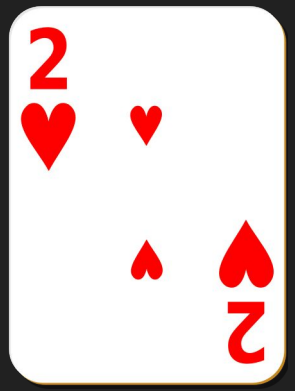

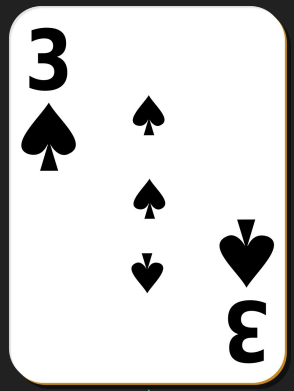

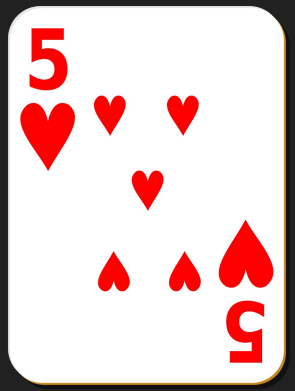

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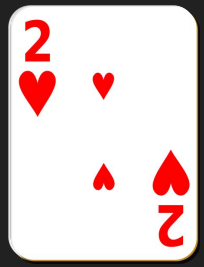

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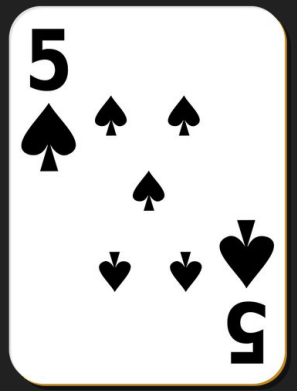

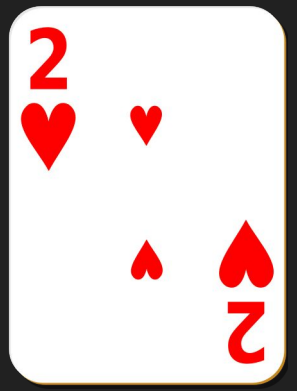

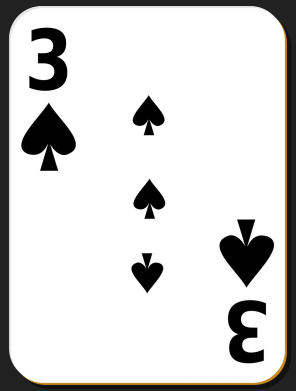

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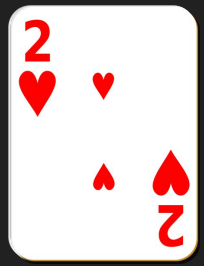

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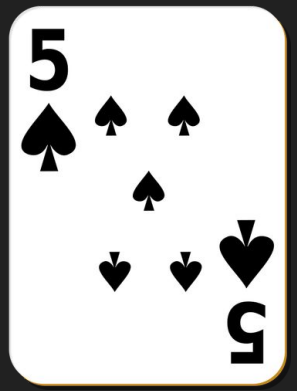

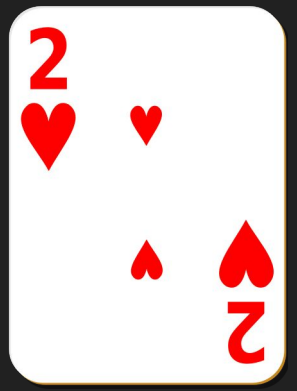

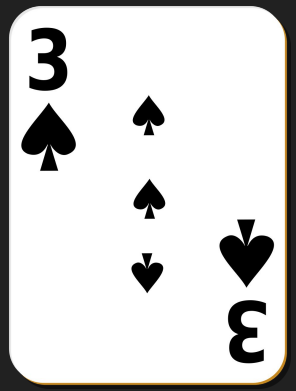

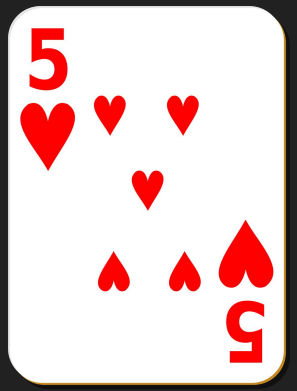

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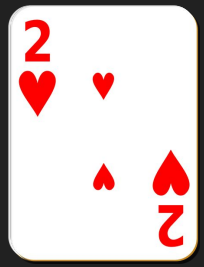

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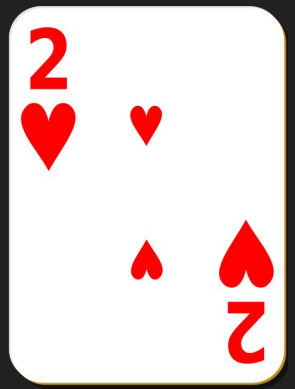

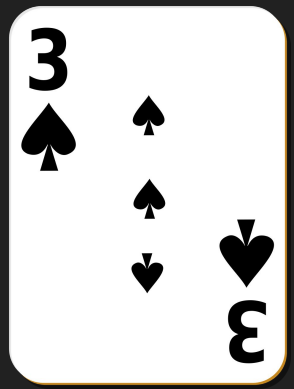

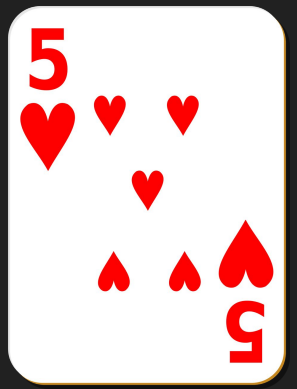

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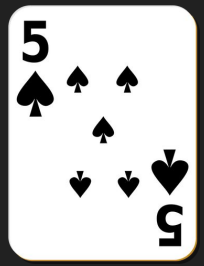

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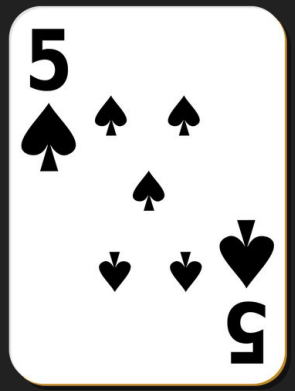
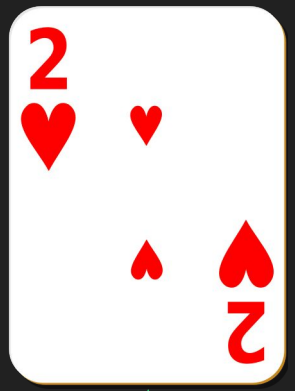
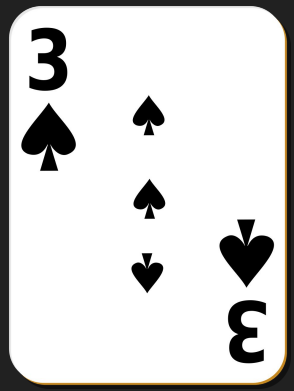
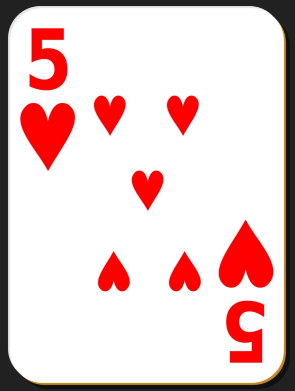


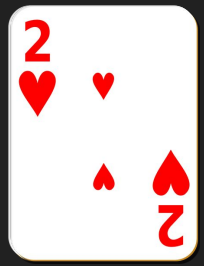






2 < 5? ✓

Low card:



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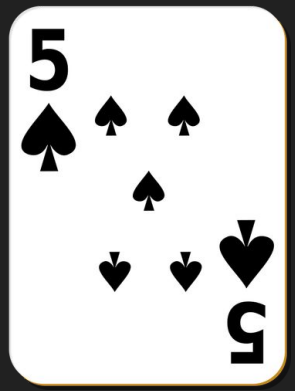
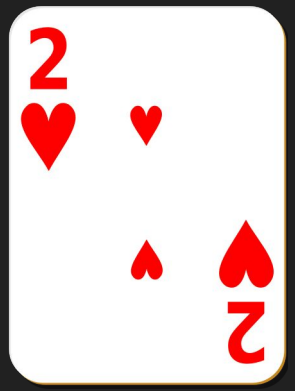
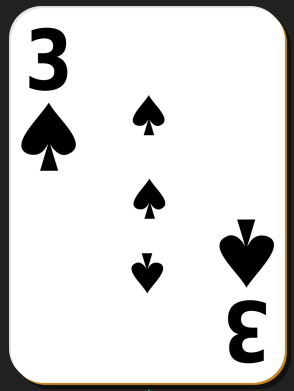
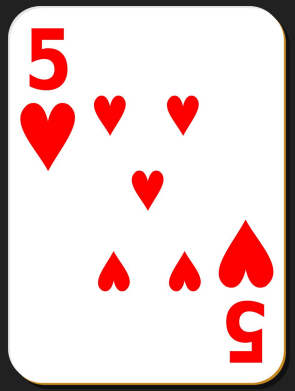


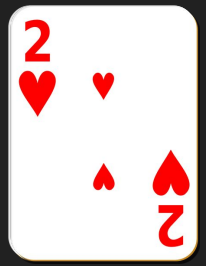




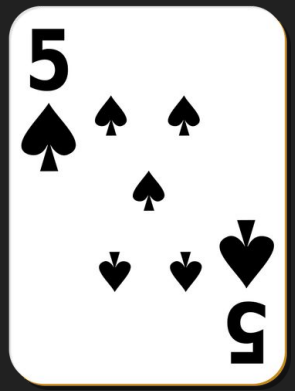


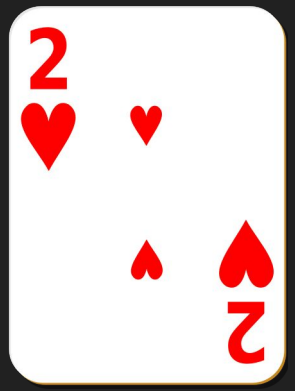
3 < 2?

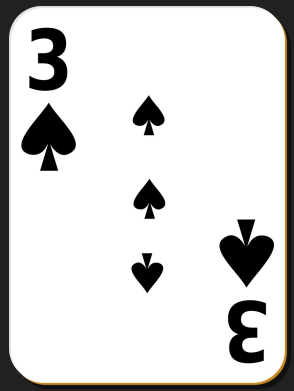
Low card:



Finding the Lowest Card

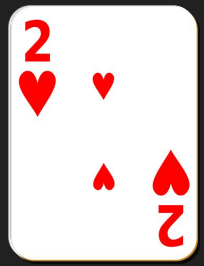




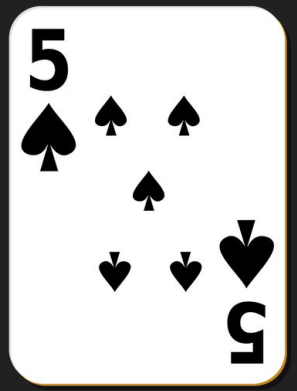


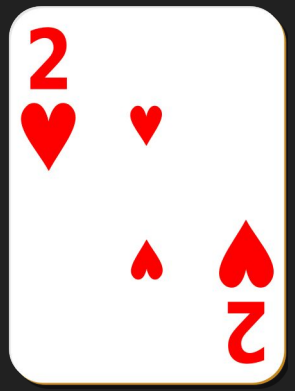
5 < 2? ✗

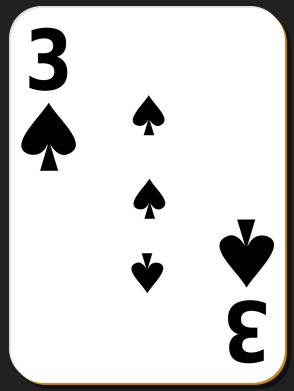
Low card:



Finding the Lowest Card



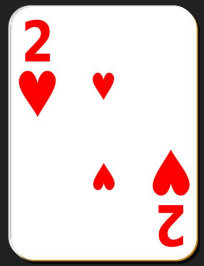




5 < 2?

Relational Operator

Low card:



Pseudocode

Looks like code, but simplified and readable.

Not meant to run on a computer.

Helps you outline what your algorithm is going to look like.

You should be able to expand on your pseudocode to help you write actual code!

Finding the Lowest Card Pseudocode

- Go from left to right
- Remember the lowest card you've seen *so far* and compare it to the next cards

Pseudocode:

Finding the Lowest Card Pseudocode

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Pseudocode:

```
lowest_card = first card in deck
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Finding the Lowest Card Pseudocode

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Pseudocode:

```
lowest_card = first card in deck

Repeatedly until end of deck:

    if current_card < lowest_card:

        lowest_card = current_card
```

Finding the Lowest Card Pseudocode

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Pseudocode:

```
lowest_card = first card in deck
Repeatedly until end of deck:
    if current_card < lowest_card:
        lowest_card = current_card
```

Loop

Finding the Lowest Card Pseudocode

- Go from left to right
- Remember the lowest card you've seen *so far* and compare it to the next cards

Pseudocode:

```
lowest_card = first card in deck

Repeatedly until end of deck:

    if current_card < lowest_card:

        lowest_card = current_card
```

Conditional

Finding the Lowest Card Pseudocode

- Go from left to right
- Remember the lowest card you've seen *so far* and compare it to the next cards

Pseudocode:

```
lowest_card = first card in deck

Repeatedly until end of deck:

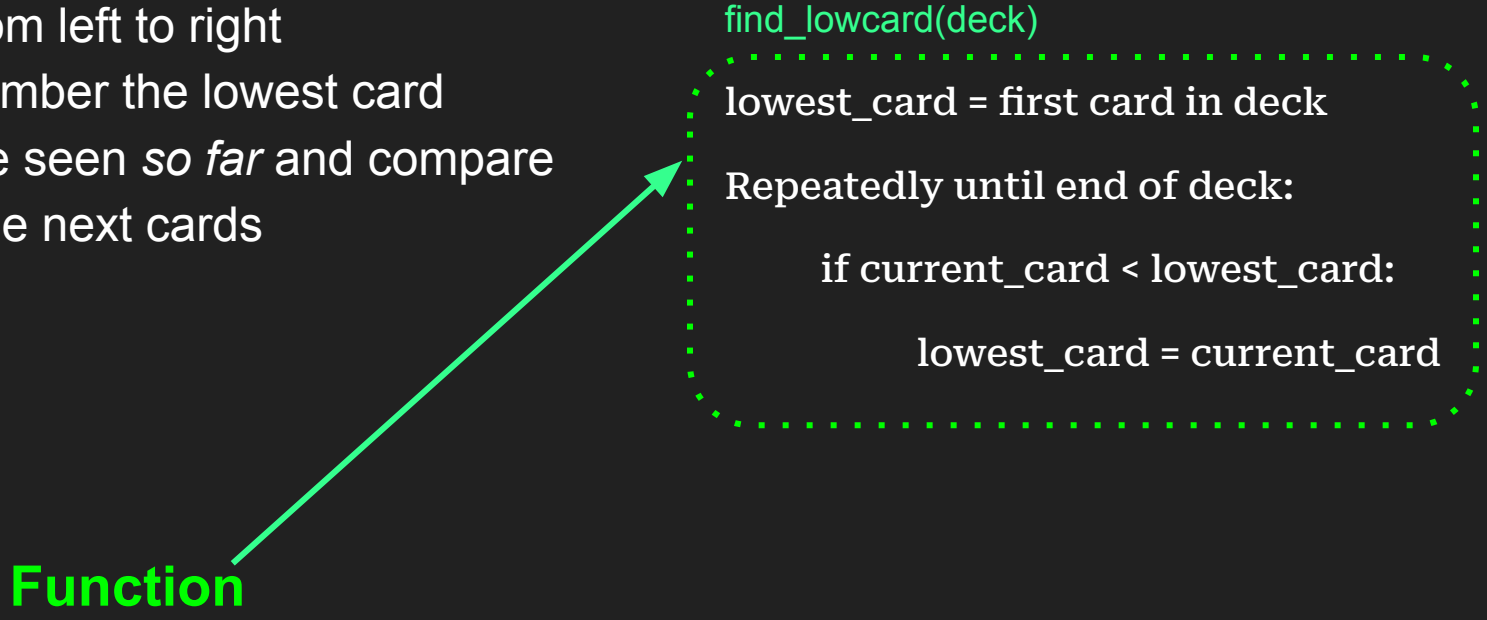
    if current_card < lowest_card:

        lowest_card = current_card
```

Relational Operator

Finding the Lowest Card Pseudocode

- Go from left to right
- Remember the lowest card you've seen *so far* and compare it to the next cards



Takeaways

- Pseudocode: simple and readable version of algorithm that resembles code
- Assignment Operator: Assigns a variable some value
- Loop Statement: Repeatedly performs an action a fixed number of times
- Relational Operator: Compares two values
- Conditional Statement: A statement that only performs an action under certain conditions
- Function: Generalizes code to work for a generic input

Again, you don't need to know these right now, but I want you to have a point of reference when you do learn them!

Homework!

- Read Syllabus and Support on Course Page
- Respond to Lesson 00 (LS00) Gradescope Questions
- Course Setup + EX00
  - Come to open house for help!