

Learning Goals (Today)

- Define algorithms
- Understand course structure
- Brainstorm group work strategies

Which are algorithms? Algorithm definition?

A. Write down: "Hello World!"

C. function Fib(i)  
• Input: integer  $i: i \geq 0$ .  
• Output:  $i^{\text{th}}$  Fibonacci number  
If  $i \in \{0, 1\}$  then  
    Return  $i$   
Return  $\text{Fib}(i-1) + \text{Fib}(i-2)$

B. `int i=1;  
while (i < 5) {  
    i = i+1;  
}`

? finite ✓  
but infinite loop

D. `public static void fun(int j){  
    int k=1;  
    k++;  
}`

no task

Def: A finite, clearly defined sequence of instructions  
for carrying out a task.

for whom?

- classmates + me  
  (Pseudocode  
  English + math)
- compute  
  (java)

Grand Plan

	Divide + Conquer	Greedy	Dynamic Programming
Describe (pseudocode + java)			
Proving Correctness			
Analyzing Runtime			
Consider Ethical Implications			

NP-completeness → comparing difficulty of problem

Learning Goals?

- <https://www.cs.middlebury.edu/~skimmel/Courses/302S22/syllabus.html#Goals>
- (go/cs302 or go.middlebury.edu/cs302)

How are we going to get there?

Group Problem Solving

Not graded on whether you solve the problem  
Credit for actively working to create a positive group environment  
Good group work often doesn't feel easy, but it should feel respectful  
What do to when things get challenging?

As a group:

- Name want to be called, pronouns if desired, Interest
- Brainstorm potential difficulties that might arise in group problem solving sessions. Then brainstorm solution that create a positive group/learning environment. Example difficulty: You suggest an idea, and no one seems to notice. A couple minutes later, another groupmate who you know has done well in past CS classes suggests a very similar idea that everyone else supports and moves forward with.
- <https://docs.google.com/document/d/1cRQvnoZLCgTd1cGvBtbqRdtWriDrXRxDiVfQWtYSovM/edit?usp=sharing>

Logistics:

- Apply to do research with CS profs this summer <https://forms.gle/kn6Tw83whKY6WVDH9>
- [Upcoming Assignments](#) (Getting to know you, Exit Tickets, Rough Draft, Participation)
- Office Hours this week: 1:30-4:30 Thursday (hybrid) or by appt
- Will post notes and videos of course (video only accessible to class)
- Exit tickets