

LEC 11

CSE 121

Putting It All Together

Questions during Class?

Raise hand or send here


sli.do #cse121



BEFORE WE START

Talk to your neighbors:

Who was your most listened-to artist last year (e.g. via Spotify Wrapped)?

Music:  [CSE 121 26sp Lecture Tunes](#) 

Instructor: Matt Wang**TAs:**

Abdul	Amogh	Anant	Anum	Cayden
Dalton	Ethan	Hayden	Jesse	Jessica
JohnathanMinh	Navya	Paul	Reese	
Ruslana	Sam	Savannah	Spencer	Shayna
Tamsyn	TJ	Trey		

Announcements, Reminders

- Quiz 1 is tomorrow!
 - Quiz resources, reference sheet on Ed resources tab
 - Email Matt (me) *before* your section if you're not able to attend!
- P2 is out & due next **Tuesday, May 19th**
 - No new assignment this week!
- R3 closes tomorrow
 - **P0**, C1, P1, C2 eligible
 - P0 cycling out of eligibility after R3!

Feedback & Closing the Loop: Wins!

Debriefing on the feedback you gave ET&L (Devshikha + Colin).

You said that the following are helping you learn:

- Your TAs (esp. quiz sections & IPL!)
- Practice quizzes, section problems, worksheets
- Pre-class materials (esp. videos)
- Lectures (esp. interactivity, polls, and answering questions)
- Resubmissions

Feedback & Closing the Loop: Suggestions!

On lecture:

- feels a bit rushed, especially close to the end
 - Matt agrees! Working on it :')
- mixed opinions on amount of time spent answering questions

On quiz section (incl. mid-quarter section feedback):

- mixed opinions on how much review vs hands-on work to do (your TAs will continue to adjust live – but lean towards hands-on)
- *potentially* releasing pre-section work earlier
 - perhaps – but no promises as of now!

Feedback & Closing the Loop: On Practice

Students mentioned wanting support on practice (and more resources).

Matt's theory™: practice should happen in **both**:

1. structured environments (e.g. lecture, quiz section, IPL)
2. unstructured environments (e.g., on your own)

Need to be deliberate in **how** you practice – not just spending X hours!

Case Study: Studying for the Quiz

How to be deliberate? One (of many) suggestions:

1. First, look at the quiz topics and make a reference sheet.
2. Then, take one practice quiz, in a timed (and “realistic”) setting.
3. Before moving on, **pause and reflect**. What was challenging?
 - concepts? Review *lecture* materials, go to IPL!
 - “how to get started”?
 - think about similar practice problems. What’s the gameplan?
 - talk through at IPL (*not just* homework help!)
 - speed or small mistakes? Use worksheets, section problems.
4. *After* practice, *then* take the next practice quiz.

Feedback & Closing the Loop: Getting Help

Find yourself hitting a wall with practice (or on work)?

That's a sign that you should be doing something differently!

(this is the *metacognition* that we ask you to do on reflections)

Advice: reflect on what's working & what isn't, *and then talk about it* (e.g., in office hours, IPL, or to your bestie)

And finally – please keep on giving us feedback!

Today's Goals

1. How to write big programs
2. How to read specifications
3. How *everything* we've learned comes together

Skills that are helpful for your upcoming assignments (e.g. P2), for taking tests (e.g. Quiz 1), and for your future programming (TBD!).

Things I will ask you momentarily...

1. Which Scanner methods will help us solve this problem?
2. Which control structures will help us solve this problem?
3. Which common patterns will help us solve this problem?

These are also on your printed worksheet (our think-pair-shares).

But first: spend a couple of minutes **reading through the SpotifyWrapped spec & expected output.**



Practice: Think



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Which Scanner methods will help us solve this problem?
(select all that apply)

- A. `next()`
- B. `nextDouble()`
- C. `nextInt()`
- D. `nextLine()`



Practice: Pair

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Which Scanner methods will help us solve this problem?
(select all that apply)

- A. `next()`
- B. `nextDouble()`
- C. `nextInt()`
- D. `nextLine()`

Searching for Scanners (1/2)

Welcome to 121 Wrapped!

Enter an artist (or 'end'): Alvvays
How many minutes did you listen to them? 21

Enter an artist (or 'end'): Laufey
How many minutes did you listen to them? 2000

Enter an artist (or 'end'): Geese
How many minutes did you listen to them? -5
How many minutes did you listen to them? 5

Enter an artist (or 'end'): end

single String token – next()

Searching for Scanners (2/2)

Welcome to 121 Wrapped!

Enter an artist (or 'end'): Alvvays

How many minutes did you listen to them? 21

Enter an artist (or 'end'): Laufey

How many minutes did you listen to them? 2000

Enter an artist (or 'end'): Geese

How many minutes did you listen to them? -5

How many minutes did you listen to them? 5

Enter an artist (or 'end'): end

single int token – nextInt()





Practice: Think



[sli.do](#)

[#cse121](#)

Which of these control structures will help us solve this problem?
(select all that apply)

- A. for loops
- B. while loops
- C. nested loops
- D. if statements



Practice: Pair

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Which of these control structures will help us solve this problem?
(select all that apply)

- A. for loops
- B. while loops
- C. nested loops
- D. if statements

Looking for Loops

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Enter an artist (or 'end'): Alvvays
How many minutes did you listen to them? 21

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How many minutes did you listen to them? -5
How many minutes did you listen to them? 5

Enter an artist (or 'end'): end

Your 121 Wrapped is here!!
You listened to 2022 minutes total this year.
Your top artist: Laufey with 2000 minutes.
You're a Laufey superfan!

Repeatedly entering an artist
(and minutes) in a loop...

Q: do we know how many times we'll loop
before we start?

No! "Indefinite Loop", while loop!

Q: *within* one iteration, are we doing any
additional repeated actions?

No! No nesting!

But also: **Yes – we ask them the number
of minutes repeatedly *until* it's nonnegative**

Identifying Ifs

[from spec]...

The `<fanType>` should be a different string depending on how many minutes they've listened to that artist:

- if they listened to the artist for under 60 minutes, say that they are a "budding fan"
- if they listened to the artist for 60-300 minutes, say that they are a "supporter"
- if they listened to the artist for 301-999 minutes, say that they are a "stan"
- if they listened to the artist for at least 1000 minutes, say that they are a "superfan"

The if statements are right there!!



Practice: Think



sli.do

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Which of these common patterns will help us solve this problem?
(select all that apply)

- A. string iteration
- B. cumulative sum
- C. fencepost pattern
- D. managing integer division



Practice: Pair

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Which of these common patterns will help us solve this problem?
(select all that apply)

- A. string iteration
- B. cumulative sum
- C. fencepost pattern
- D. managing integer division

Cumulative Sum in Action

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Enter an artist (or 'end'): Geese
How many minutes did you listen to them? -5
How many minutes did you listen to them? 5

Enter an artist (or 'end'): end

Your 121 Wrapped is here!!
You listened to 2026 minutes total this year.
Your top artist: Laufey with 2000 minutes.
You're a Laufey superfan!

total minutes: 0

total minutes: $0 + 21 = 21$

total minutes: $21 + 2000 = 2021$

total minutes: $2021 + 5 = 2026$

total minutes: 2026

Cumulative *Max* in Action

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How many minutes did you listen to them? -5
How many minutes did you listen to them? 5

Enter an artist (or 'end'): end

Your 121 Wrapped is here!!
You listened to 2026 minutes total this year.
Your top artist: Laufey with 2000 minutes.
You're a Laufey superfan!

max minutes: 0

max minutes: $\max(0, 21) = 21$

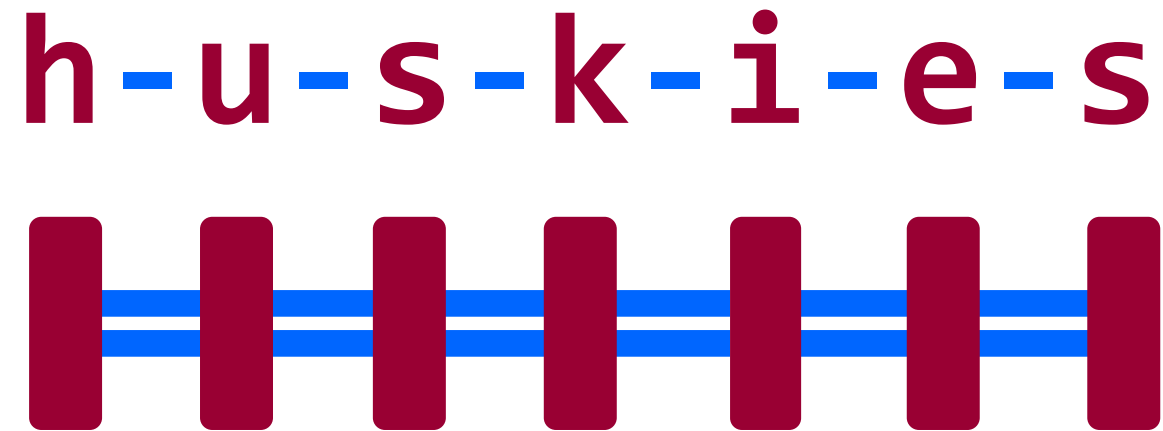
max minutes: $\max(21, 2000) = 2000$

max minutes: $\max(2000, 5) = 2000$

max minutes: 2000

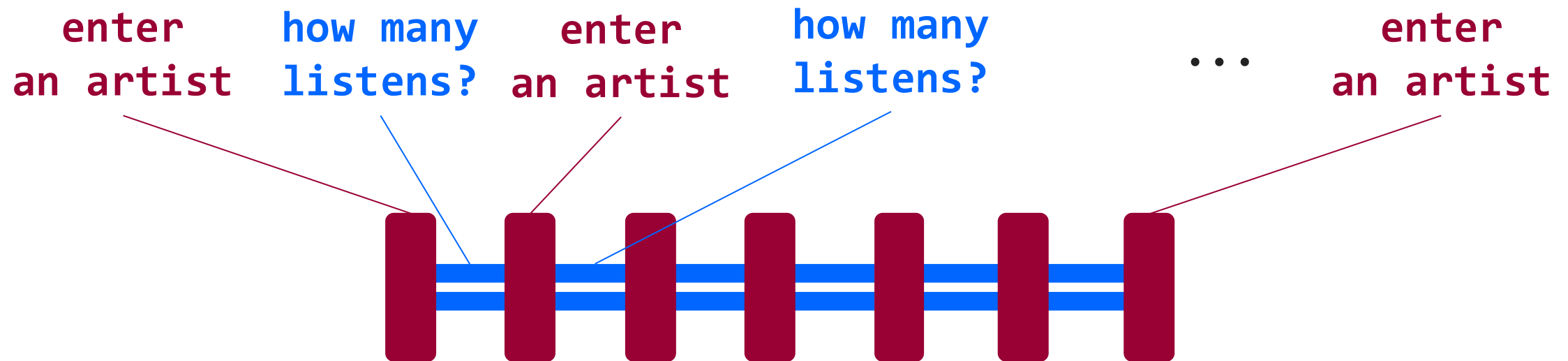
Reminder: Fencepost Pattern

Some task where one piece is repeated n times, and another piece is repeated $n-1$ times and they alternate



Fencepost Pattern .. for User Input?

Some task where one piece is repeated n times, and another piece is repeated $n-1$ times and they alternate



Fencepost Pattern in Action

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Your 121 Wrapped is here!!
You listened to 2026 minutes total this year.
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You're a Laufey superfan!

enter an artist
how many listens?

enter an artist
how many listens?

enter an artist
how many listens?

enter an artist

Tackling Big Programs

Two big pieces of advice:

1. Start small

- can you do a simpler version of the problem?
- often: ignoring a part of the problem, *for now*

2. Test *frequently*

- make sure that your code works *before* moving on
- **don't only test at the end!** (very hard to debug!!)