CSE 121 Lesson 13: Arrays

Matt Wang & Brett Wortzman

Autumn 2024
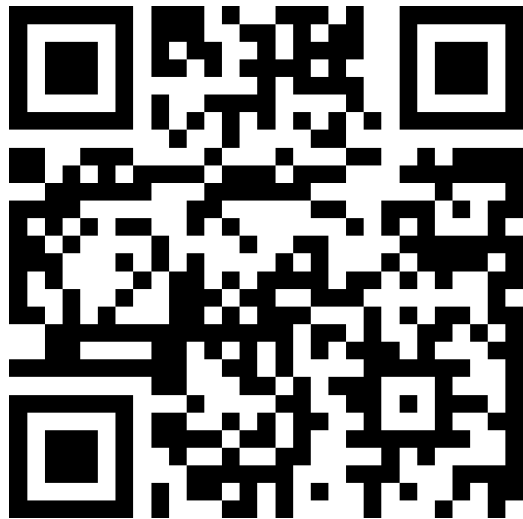
sli.do #cse121

TAs:

Abby	Afifah	Ailsa	Alice	Aliyan	Arohan
Chloë	Christopher	Dalton	Derek	Elizabeth	Ethan
Hanna	Hannah	Heather	Hibbah	Janvi	Jasmine
Judy	Julia	Kelsey	Lucas	Luke	Mahima
Maitreyi	Maria	Merav	Minh	Neha	Ronald
Ruslana	Sahej	Sam	Samrutha	Sushma	Vivian
Yijia	Zachary				

Today's playlist:
121 24au lecture tunes

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Announcements, Reminders

- P2 due next Tuesday, November 12th

- R4 released, due next Thursday November 14th

- Quiz 2 in 2 weeks (Thursday, November 21st)
  - will include everything up to next Wed's lecture

- Quiz 1 grades *almost certainly* before Quiz 2
  - but, no promises on earlier :(sorry!

- IPL closed for Veteran's Day (November 11th)

Feedback & Closing the Loop: The Good

```
🎃----nehaa24------🎃
|👾 Friend # 1: daltonbo
|👾 Friend # 2: rkorol
-------------------

🎃----samkoro------🎃
|👾 Friend # 1: yethanli
|👾 Friend # 2: zachwu5
|👾 Friend # 3: mahimu
|👾 Friend # 4: qsun05
-------------------

🎃----ali1726------🎃
|👾 Friend # 1: tan7271
|👾 Friend # 2: deliu
|👾 Friend # 3: hzpan8
-------------------

🎃----mxw------🎃
|👾 Friend # 1:
-------------------
```
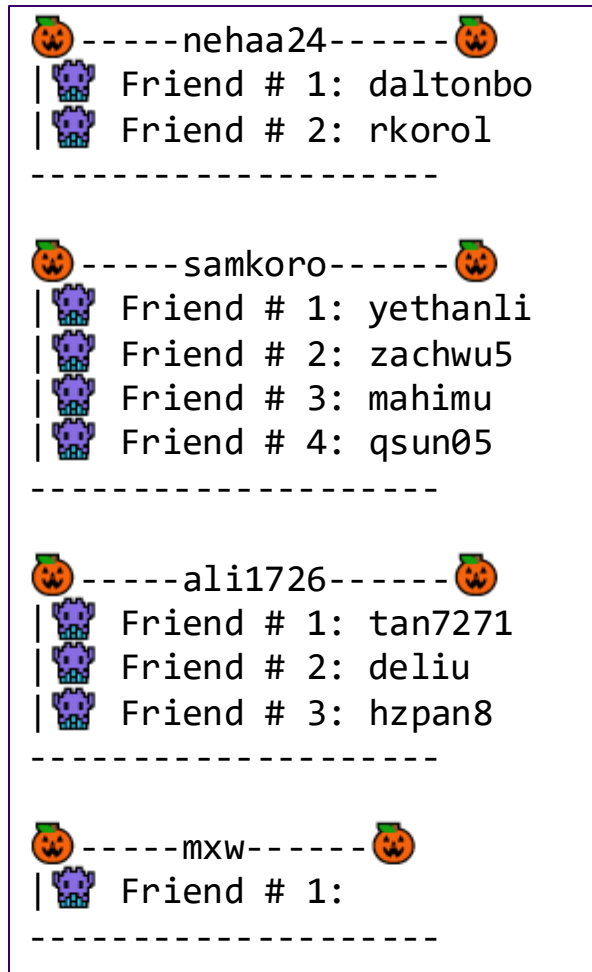
- <u>Your TAs</u> (esp. quiz sections & IPL) :)

- Practice Quizzes & Problems

- Pre-class materials

- Lectures (esp. live coding & interaction)

- Assignments

- Ed discussion board

- Classroom vibes & peer engagement

- Being funny (sometimes?) & empathetic

Feedback & Closing the Loop: Suggestions

```
Network visualization:
nehaa24's friends:
   ✦ daltonbo
   ✦ rkorol
samkoro's friends:
   ✦ yethanli
   ✦ zachwu5
   ✦ mahimu
   ✦ qsun05
ali1726's friends:
   ✦ tan7271
   ✦ deliu
   ✦ hzpan8
mxw's friends:
   ✦ None :( womp womp
```

- Time management & pace in lecture, including longer time spent coding
    - overall agree – we're on it!

- Even more practice quizzes (& problems)!
    - stay tuned! (esp. for the final)
    - but also: more practice quizzes != doing better!

- More debugging & code quality, but split on whether it should be in lecture or not
    - we're thinking about this! & talking to TAs

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Feedback & Closing the Loop: Practice (1/2)

```
Network visualization:
✨ʕ •ᴥ•ʔ nehaa24's 2 friends✨
*--daltonbo
*--rkorol
    🧡💛💚💙💜

✨ʕ •ᴥ•ʔ samkoro's 4 friends✨
*--yethanli
*--zachwu5
*--mahimu
*--qsun05
    🧡💛💚💙💜

✨ʕ •ᴥ•ʔ ali1726's 3 friends✨
*--tan7271
*--deliu
*--hzpan8
    🧡💛💚💙💜

✨ʕ •ᴥ•ʔ mxw's 0 friends✨
    🧡💛💚💙💜
```

Practice can happen...

- in structured environments (e.g. quiz section, IPL)

- in unstructured environments (e.g. on your own)

Practice problems! (in order of relevance)

1. Practice quizzes, section problems

2. "Extra Review" problems

3. Pre-class & Lecture Problems

4. PracticeIt

Feedback & Closing the Loop: Practice (2/2)

User😎: nehaa24
Friend(s)🍀: daltonbo, rkorol

User😎: samkoro
Friend(s)🍀: yethanli, zachwu5, mahimu, qsun05

User😎: ali1726
Friend(s)🍀: tan7271, deliu, hzpan8

User😎: mxw
Friend(s)🍀: No FRIEND😳

But: what we care about in this class is <u>transfer</u>: how can you use your knowledge on new tasks.

- won't ask you *exactly* what's on the practice quiz

- more practice quizzes has diminishing returns

- what programming in real life looks like!

Find yourself hitting a wall with practice (or on work)? **A sign that you should be doing something different!**

Advice: reflect on what's working & talk to someone (office hours, IPL, or your bestie)

Feedback & Closing the Loop: in closing…

```
                              .·★·🍎·.
  ✦ nehaa24
     - daltonbo
     - rkoro1
  .🍎·.★·.————————————
                              .·★·🍏·.
  ✦ samkoro
     - yethanli
     - zachwu5
     - mahimu
     - qsun05
  .🍏·.★·.————————————
                              .·★·🍎·.
  ✦ ali1726
     - tan7271
     - deliu
     - hzpan8
  .🍎·.★·.————————————
                              .·★·🍏·.
  ✦ mxw
  .🍏·.★·.————————————
```
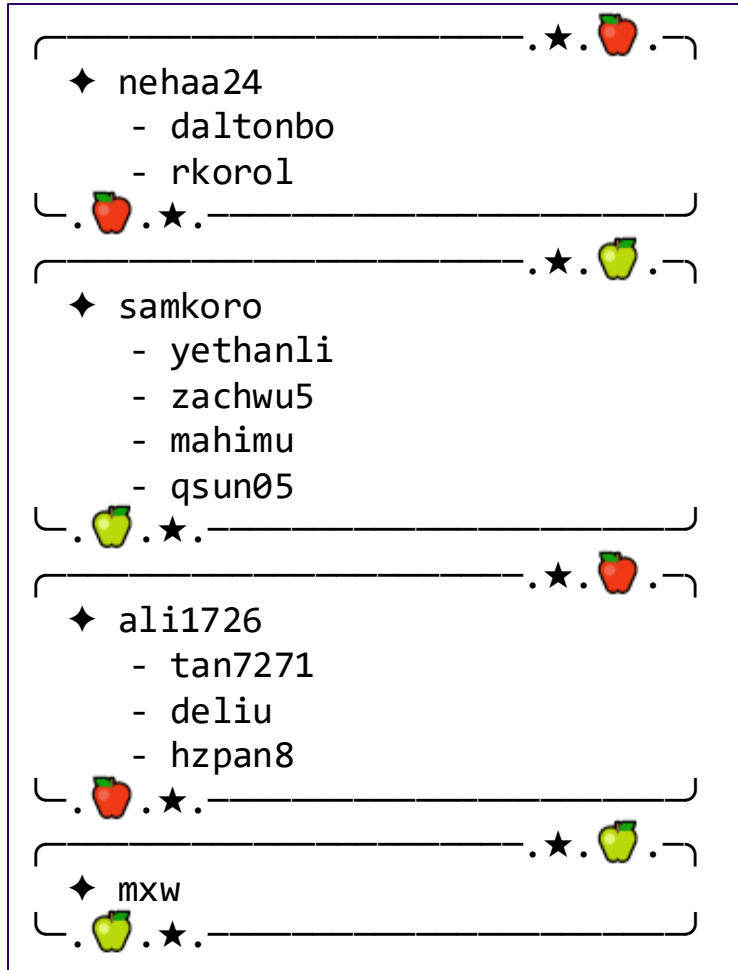
Reading specifications carefully is a skill!

- "Fun" fact: Matt has to read specs too…

Make use of the IPL!

- not *just* for homework help!

- some times are busier than others … plan for this!

And finally, please keep giving us feedback!

and one last C2 that made me chuckle

```
What the emoji means:
*-------------------------------*
|          😎 : User            |
|          👏 : Users friends   |
|          ❌ : Fake friends    |
*-------------------------------*
-----------------------------\
😎jachi's friends
👏   hconeybe
👏   hibbahk
❌   gumball
_____/

-----------------------------\
😎juliak24's friends
👏   hhemps
👏   eshira
👏   sahejk
❌   gumball
_____/
```

```
-----------------------------\
😎gumball's friends
👏   nwang913
👏   swofferh
👏   tradams
👏   aaw01
👏   sdokka
👏   jachi
❌   juliak24
_____/


-----------------------------\
😎mxw's friends
❌
_____/

(mxw has no friends + are fake somehow !? 😔❌)
```
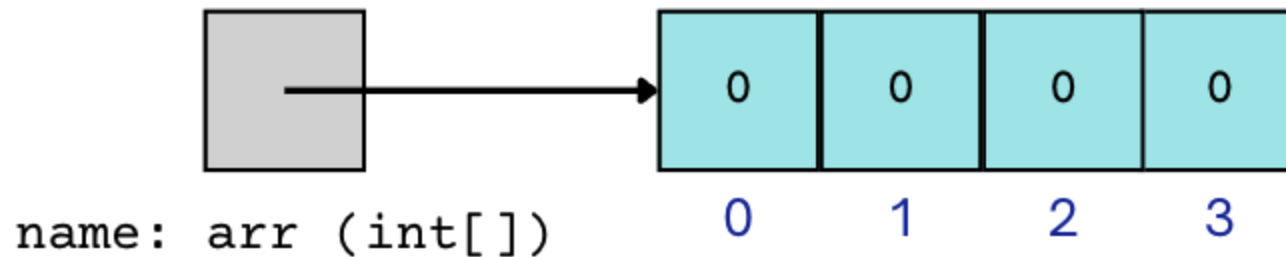
(PCM) Arrays

- Elements must <u>all</u> be the same type

- Indices (starting at 0)
- <u>Must</u> decide size when created!
- `arr.length` to get `arr`'s length
- `Arrays.toString(arr)` to get a nice `String` version


```
int[] arr = new int[4];
```

(PCM) Array Traversal Pattern

```java
for (int i = 0; i < arr.length; i++) {
    // do something with arr[i]
}
```

Poll in with your answer!

How can we get the last element of an array `arr`?

A. `arr[arr.length()]`

B. `arr[length()]`

C. `arr[arr.length]`

D. `arr[arr.length() - 1]`

E. `arr[arr.length - 1]`

Poll in with your answer!

What would the array a store at the end of this `arrayMystery` method if `{-20, 20, 26, 32, 50, 3}` was passed in?

```java
public static void arrayMystery(int[] a) {
  for (int i = a.length - 1; i >= 1; i--) {
    if (a[i] > a[i - 1] + 10) {
      a[i - 1] = a[i - 1] + 5;
    }
  }
}
```

A. `{-20, 20, 26, 32, 50, 3}`

B. `{-15, 25, 31, 37, 55, 8}`

C. `{-15, 25, 31, 37, 50, 3}`

D. `{-15, 20, 26, 37, 50, 3}`

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Poll in with your answer!

Tracing through {-20, 20, 26, 32, 50, 3}

```java
public static void arrayMystery(int[] a) {
  for (int i = a.length - 1; i >= 1; i--) {
    if (a[i] > a[i - 1] + 10) {
      a[i - 1] = a[i - 1] + 5;
    }
  }
}
```

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