

LEC 15

CSE 121

Array Patterns

Questions during Class?

Raise hand or send here

sli.do **#cse121**

BEFORE WE START

*Talk to your neighbors:**What's your favorite coffee shop?*Music: 🌸 [CSE 121 25sp Lecture Tunes](#) 🌸**Instructor:** Miya Natsuhara

TAs:	Chloë	Hibbah	Sushma
	Ailsa	Julia	Kelsey
	Johnathan	Sahej	Shayna
	Christian	Ruslana	Hannah
	Merav	Hanna	Zach
	Judy	Maitreyi	
	Janvi	Ayesha	

Announcements, Reminders

- Quiz 2 in section **tomorrow (Thursday, May 29th)!**
 - Reference sheet linked from the [Quiz 2 Practice Quizzes post](#)
- P3 will be released tonight & due next **Tuesday, June 3rd at 11:59pm**
- R5 due tomorrow (eligible: **P1**, C2, P2)
 - P1 cycling out of eligibility after R5
- Note: all assignments will be eligible for resubmission in R7!
- Details about the [PSW → Extra Resub posted on Ed!](#)
- Final Exam on Thursday, June 12 2:30pm – 4:20pm
 - Left-handed desk request form due Tuesday, June 3
 - More details posted soon, and will be discussed on Friday
- Gumball & friends visit on campus Monday, June 9 1:00pm – 2:30pm around Drumheller fountain!

(PCM) Why Discuss Array Patterns?

- Arrays are important! This is our fourth lecture covering arrays
- Analogy: tools in toolbox
- Helpful for your future in programming

(PCM) Counting Elements that Meet a Condition

"one"	"two"	"three"	"six"	"seven"	"eight"	"ten"
-------	-------	---------	-------	---------	---------	-------

```
public static int evenLength(String[] list) {  
    int countEven = 0;  
    for (int i = 0; i < list.length; i++) {  
        if (  
            countEven++;  
        }  
    }  
  
    return countEven;  
}
```

(PCM) Modifying Elements of an Array

4	8	15	16	23	42
---	---	----	----	----	----

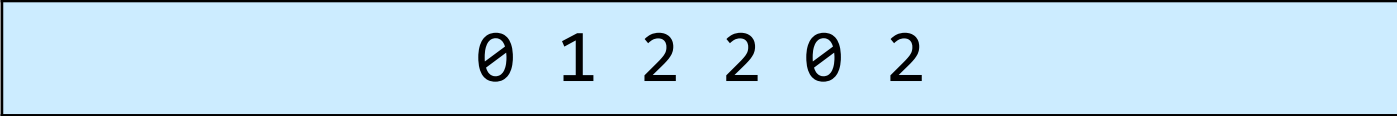
```
public static void clamp(int min, int max, int[] list) {  
    for (int i = 0; i < list.length; i++) {  
        if (list[i] > max) {  
            list[i] = max;  
        } else if (list[i] < min) {  
            list[i] = min;  
        }  
    }  
}
```

(PCM) Searching for an Element

"one"	"two"	"three"	"six"	"seven"	"eight"	"ten"
-------	-------	---------	-------	---------	---------	-------

```
public static int indexOfIgnoreCase(String phrase, String[] list) {  
    for (int i = 0; i < list.length; i++) {  
        if (                ) {  
            return i;  
        }  
    }  
  
    return -1;  
}
```

(PCM) Array of Counters



0 1 2 2 0 2

```
public static int[] numCount(Scanner input, int numPrompts) {  
    int[] counts =  
        ;  
    for (int i = 0; i < numPrompts; i++) {  
        int num = input.nextInt();  
  
        ;  
    }  
  
    return counts;  
}
```

(PCM) Analyzing Multiple Elements in an Array (isPalindrome)

0	1	9	1	0
---	---	---	---	---

```
public static boolean isPalindrome(int[] list) {  
    for (int i = 0; i < list.length / 2; i++) {  
        if (list[i] != list[list.length - 1 - i]) {  
            return ;  
        }  
    }  
  
    return ;  
}
```

(PCM) Analyzing Multiple Elements in an Array (isMirrored)

0	1	9	1	0
---	---	---	---	---

```
public static boolean isMirrored(double[][] arr) {  
    for (int i = 0; i < arr.length; i++) {  
        int rowLength = arr[i].length;  
        for (int j = 0; j < rowLength / 2; j++) {  
            if (arr[i][j] != arr[i][rowLength - 1 - j]) {  
                return false;  
            }  
        }  
    }  
    return true;  
}
```

(PCM) Shifting Elements

9.6	-88.0	4.815	0.009	7.0184	42.9
-----	-------	-------	-------	--------	------

```
public static void rotateRight(double[] list) {  
    double lastElement = list[list.length - 1];  
  
    for (int i = list.length - 1; i > 0; i--) {  
        list[i] = list[i - 1];  
    }  
  
    ;  
  
}
```

(PCM) Your Turn!

- Review the problems in the Array Patterns PCM
 - On slido, vote for any problems you would like to go over together!
- If you have time, try some new problems!
 - [TODO] rotateLeft: Shifting Elements problem
 - [TODO] isAllPairs: Analyzing Multiple Elements problem

(PCM) Questions to Ask Ourselves

- “Are we looking at each element in the array, one at a time?”
 - Loop traversal
- “Are we changing elements in the array?”
 - Update the array at a specific index
- “Do we only want to do a task if a certain condition is true?”
 - Conditional(s)