

LEC 08

CSE 121

More Methods, Parameters, and Returns

Questions during Class?

Raise hand or send here

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BEFORE WE START

*Talk to your neighbors:**What's your favorite book?***Respond on sli.do!**Music:  [CSE 121 26wi Lecture Tunes](#) **Instructor:** Miya Natsuhara

TAs:	Amogh	Hayden	Anum	Sam	Shayna
	William	Aki	Abdul	Ethan	Jesse
	Johnathan	Spencer	Janvi	Jessica	Minh
	Anant	Savannah	Navya	Paul	Cayden
	Reese	Tamsyn	Ruslana	Carson	

Agenda

- **Announcements, Reminders** ←
- Methods, Parameters Warmup
- Returns Review
- Random Characters Example

Announcements, Reminders

- C2 (Password Protector) releasing later today, due **Thursday** Feb 12th
 - involves conditionals (Friday's topic)
- R1 due tomorrow; R2 opens tomorrow, due Thursday, Feb 12th
- Quiz 1: Thursday, Feb 19th
 - Quiz 0 grades expected out early next week

Agenda

- Announcements, Reminders
- **Methods, Parameters Warmup** ←
- Returns Review
- Random Characters Example



Practice: Think

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What is the output of this program?

```
public static void main(String[] args) {  
    int x = 9;  
    int y = 2;  
    int z = 5;  
  
    mystery(z, y, x);  
  
    mystery(y, x, z);  
}  
  
public static void mystery(int x, int z, int y) {  
    System.out.println(z + " and " + (y - x));  
}
```

A. 2 and 4
9 and 3

B. 5 and -7
5 and -7

C. 9 and -3
5 and -7

D. I'm not sure



Practice: Pair

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What is the output of this program?

```
public static void main(String[] args) {  
    int x = 9;  
    int y = 2;  
    int z = 5;  
  
    mystery(z, y, x);  
  
    mystery(y, x, z);  
}  
  
public static void mystery(int x, int z, int y) {  
    System.out.println(z + " and " + (y - x));  
}
```

A. 2 and 4
9 and 3

B. 5 and -7
5 and -7

C. 9 and -3
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D. I'm not sure

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PCM: Returns

Returns allow us to send values *out of a method*

```
public static <type> myMethod(int num) {  
    System.out.print(num + " is the best!");  
    ...  
    return <value of correct type>  
}
```

return does 3 things:

1. **Evaluate** the expression
2. **Return** this value to where the method was called
3. **Exit** the method

Calling a method that returns a value...

```
<type> result = myMethod(42);
```


Recall: Math

Method	Description
<code>Math.abs(<i>value</i>)</code>	Returns the absolute value of <i>value</i>
<code>Math.ceil(<i>value</i>)</code>	Returns <i>value</i> rounded up
<code>Math.floor(<i>value</i>)</code>	Returns <i>value</i> rounded down
<code>Math.max(<i>value1</i>, <i>value2</i>)</code>	Returns the larger of the two values
<code>Math.min(<i>value1</i>, <i>value2</i>)</code>	Returns the smaller of the two values
<code>Math.round(<i>value</i>)</code>	Returns <i>value</i> rounded to the nearest whole number* note: need to cast result to int (it's complicated!)
<code>Math.sqrt(<i>value</i>)</code>	Returns the square root of <i>value</i>
<code>Math.pow(<i>base</i>, <i>exp</i>)</code>	Returns <i>base</i> raised to the <i>exp</i> power

Recall: String Methods

Method	Description
<code>length()</code>	Returns the length of the string.
<code>charAt(<i>i</i>)</code>	Returns the character at index <i>i</i> of the string
<code>indexOf(<i>s</i>)</code>	Returns the index of the first occurrence of <i>s</i> in the string; returns -1 if <i>s</i> doesn't appear in the string
<code>substring(<i>i</i>, <i>j</i>)</code> or <code>substring(<i>i</i>)</code>	Returns the characters in this string from <i>i</i> (inclusive) to <i>j</i> (exclusive); if <i>j</i> is omitted, goes until the end of the string
<code>contains(<i>s</i>)</code>	Returns whether or not the string contains <i>s</i>
<code>equals(<i>s</i>)</code>	Returns whether or not the string is equal to <i>s</i> (case-sensitive)
<code>equalsIgnoreCase(<i>s</i>)</code>	Returns whether or not the string is equal to <i>s</i> ignoring case
<code>toUpperCase()</code>	Returns an uppercase version of the string
<code>toLowerCase()</code>	Returns a lowercase version of the string

Chaining methods in expressions

b	u	b	b	l	e		g	u	m
0	1	2	3	4	5	6	7	8	9

```
s.substring(7, 8).toUpperCase() + s.substring(8) + "ball"
```

```
"g".toUpperCase() + s.substring(8) + "ball"
```

```
"G" + s.substring(8) + "ball"
```

```
"G" + "um" + "ball"
```

Remember: Method Comments

Each method you write (except main) should have a short comment!

```
// Behavior:
// - Calculates net profit using monthly income and daily spending.
// Parameters:
// - income: user's income this month (non-negative)
// - spending: amount spent each day this month (non-negative)
// Returns:
// - int: the net profit or loss. Positive if profit, negative if loss.
public static int calculateNetExpenses(int income, int spending) {
    return income - (spending * DAYS_IN_MONTH);
}
```



Practice: Think

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What value is returned from this method?

```
public static int returnExample() {  
    for (int i = 0; i < 5; i++) {  
        return i;  
    }  
    return -1;  
}
```

A. -1

B. 0

C. 4

D. 5



Practice: Pair

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What value is returned from this method?

```
public static int returnExample() {  
    for (int i = 0; i < 5; i++) {  
        return i;  
    }  
    return -1;  
}
```

A. -1

B. 0

C. 4

D. 5

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Common Problem-Solving Strategies

- **Analogy** – Is this similar to another problem you've seen?
- **Brainstorming** – Consider steps to solve problem before jumping into code
 - Try to do an example "by hand" → outline steps
- **Solve sub-problems** – Is there a smaller part of the problem to solve?
- **Debugging** – Does your solution behave correctly?
 - What is it doing?
 - What do you expect it to do?
 - What area of your code controls that part of the output?
- **Iterative Development** – Can we start by solving a different problem that is easier?