LEC 08

CSE 121

More Methods, Parameters, and Returns

Questions during Class?

Raise hand or send here

sli.do #cse121

BEFORE WE START

Talk in chat:

What's your favourite book?

Music: 121 25wi lecture playlist

Instructor: Matt Wang

TAs:

Ailsa	Alice	Chloë	Christopher
Ethan	Hanna	Hannah	Hibbah
Janvi	Judy	Julia	Kelsey
Lucas	Luke	Maitreyi	Merav
Ruslana	Samrutha	Sam	Shayna
Sushma	Vivian		

Announcements, Reminders

- Quiz 0 is **tomorrow** in your quiz section!
  - please read quiz logistics Ed announcement carefully!!
  - new resource: practice quiz walkthroughs (s/o Judy!!!)
  - can't make it (incl. sick)? email me **before** your quiz tomorrow!
- C2 (Social Network) releasing later today, due **Thursday** Feb 13th
  - C2 & P2 will have off-cycle release and/or due dates
  - for C2, expecting you *probably* won't start today; involves conditionals (Friday's topic)
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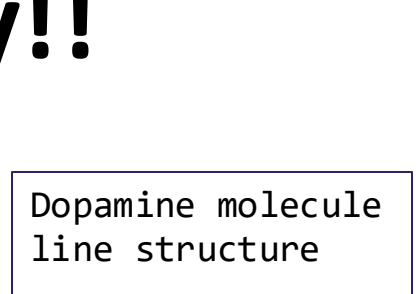
C1: So Much Variety!!

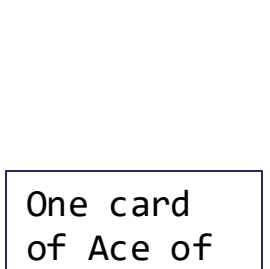
ASCII art of a snowflake

Mountains!

Dopamine molecule line structure

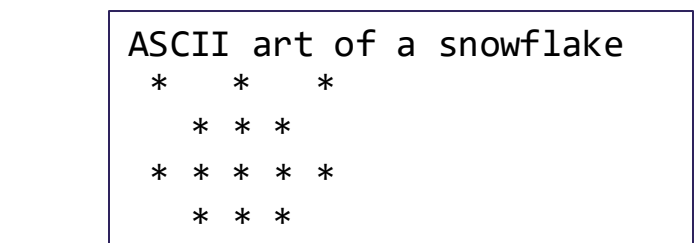


One card of Ace of Diamonds

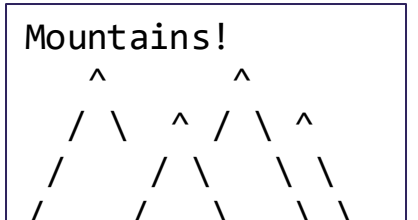


A whale named Reginald! He looks lonely :(

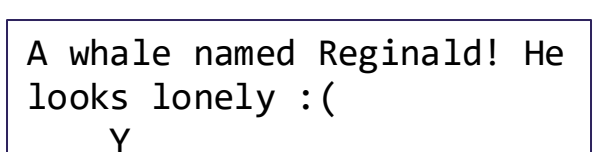
A cup of boba milk tea



A Sakura Tree

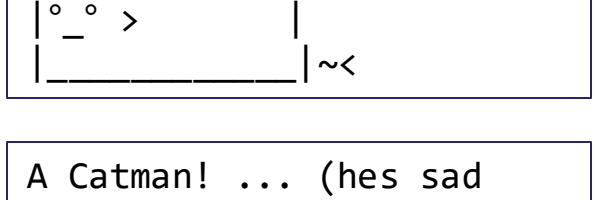


A Catman! ... (hes sad that he is alone)

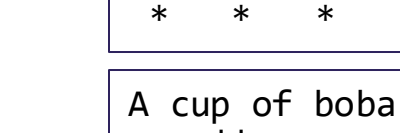


a Chinese character "山"

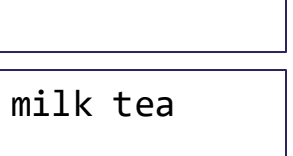
This figure is a princess in a gown. (shes sooo bald :( )



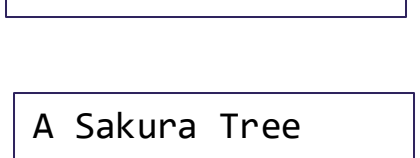
A duck swimming



A Heart!



A Money Tree!



UW Logo Printed

C1: Cats vs Dogs?

```
love cat
     /\
 )  (>') ♡
(  /  )
 \(__)|_
```

```
A cat! :3
 /\___/\
( o ᵕ o )
( U   U )
ノ
```

```
a cat :>
   _^__^_
___|o _ o|
|        |
|_|----|_|
```

```
don't put all (3) your CATs in a
row (oops)
／|、        ／|、        ／|、
(°、｡7      (°、｡7      (°、｡7
 |、~ヽ       |、~ヽ       |、~ヽ
じしf_)ノ    じしf_)ノ    じしf_)ノ
```

```
An ASCII figure drawing of my cat
typing on a keyboard.
   /\        /\
  /^ \_____/ ^\
 /     o  o    \
/     n    n    \
\       ___     /
 ===     Y    ===
 /              \
_____nnn______nnn___
```

```
Hi! I am Dubs!

 ^-^      ^
o'')}____//
 `__/      )
 (_-(_/-(_/
```

```
A dog!
 __  __
 |_ _|
 | O  O ___
 |        D
  --------`
```

```
A Dog with Two Fishes.
    / \__
   (    @\___
  /         O
 /   (_____/
/_____/   U
          ><((((('>
```

```
Every day is leg day
                              /\/\_
        n                    (    @\___
       ||                    /        (^^)
       ||                   /   (_____/
       \\__________________/_____/   U
       |*                     $  |
       \\--||----------//---||-
         || ||          ||   ||
         || ||          ||   ||
         || ||          ||   ||
         || ||          ||   ||
         || ||          ||   ||
         || ||          ||   ||
  _&______w__w__________ w____w___
How tall are you?!?!?
Thanks for asking im 6 legs tall
```

C1: Movie Characters

```
small totoro
 |~\/~|
/ 0T0 \
\_____/
```

```
Mushu from Mulan.
  \__/
 ( oo )
  (--)
 /|__|\
  |__|
  |__|
  |__|
  |__|
  /  \
```

```
An ASCII art
stormtrooper:

   _____
  /_____\
.|()/ \()|.
(""_-^-_"")
 \_0/=\0_/
```

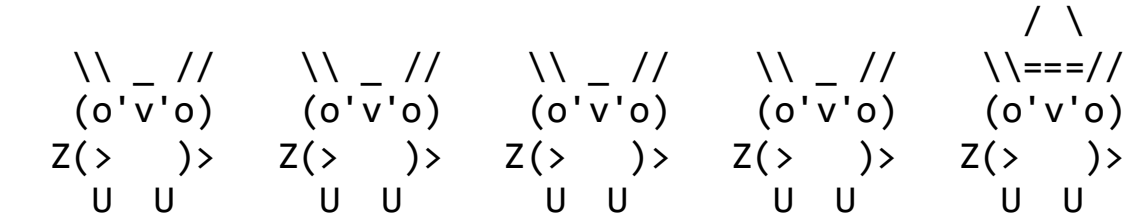
```
HI! WE ARE BAYMAX IN SQUARE MATRIX!
   ( ●─● )       ( ●─● )       ( ●─● )       ( ●─● )
  /       \     /       \     /       \     /       \
 /    ○    \   /    ○    \   /    ○    \   /    ○    \
/  /     ╲ \ /  /     ╲ \ /  /     ╲ \ /  /     ╲ \
| /       \ | | /       \ | | /       \ | | /       \ |
\ʊ         ʊ/ \ʊ         ʊ/ \ʊ         ʊ/ \ʊ         ʊ/
 ├-     -┤   ├-     -┤   ├-     -┤   ├-     -┤
 |   /\  /    |   /\  /    |   /\  /    |   /\  /
 |   )  )     |   )  )     |   )  )     |   )  )

   ( ●─● )       ( ●─● )       ( ●─● )       ( ●─● )
  /       \     /       \     /       \     /       \
 /    ○    \   /    ○    \   /    ○    \   /    ○    \
/  /     ╲ \ /  /     ╲ \ /  /     ╲ \ /  /     ╲ \
| /       \ | | /       \ | | /       \ | | /       \ |
\ʊ         ʊ/ \ʊ         ʊ/ \ʊ         ʊ/ \ʊ         ʊ/
 ├-     -┤   ├-     -┤   ├-     -┤   ├-     -┤
 |   /\  /    |   /\  /    |   /\  /    |   /\  /
 |   )  )     |   )  )     |   )  )     |   )  )
```

C1: Extensive Extensions

Draws a ASCII Heart with the word Karuna (Compassion)

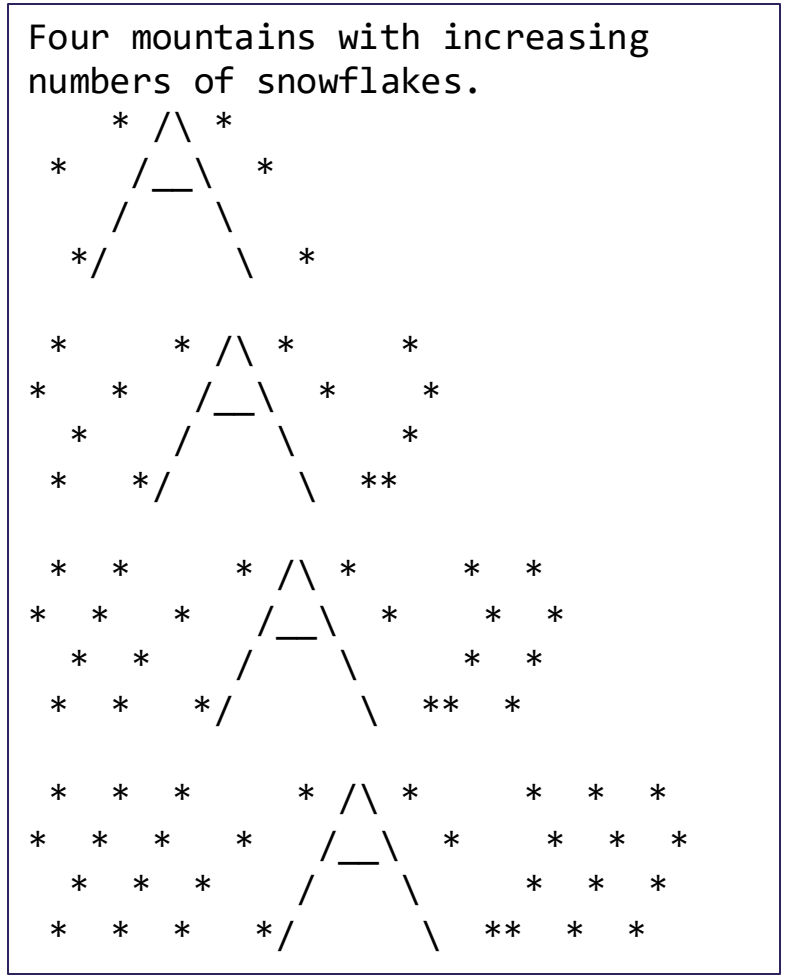
```
      Karuna        Karuna
   KarunaKaruna  KarunaKaruna
KarunaKarunaKarunaKarunaKaruna
KarunaKarunaKarunaKarunaKaruna
KarunaKarunaKarunaKarunaKaruna
   KarunaKarunaKarunaKaruna
      KarunaKarunaKaruna
         KarunaKaruna
            Karuna
              **
```

Pika-Pageant! Who has the stylish hat?

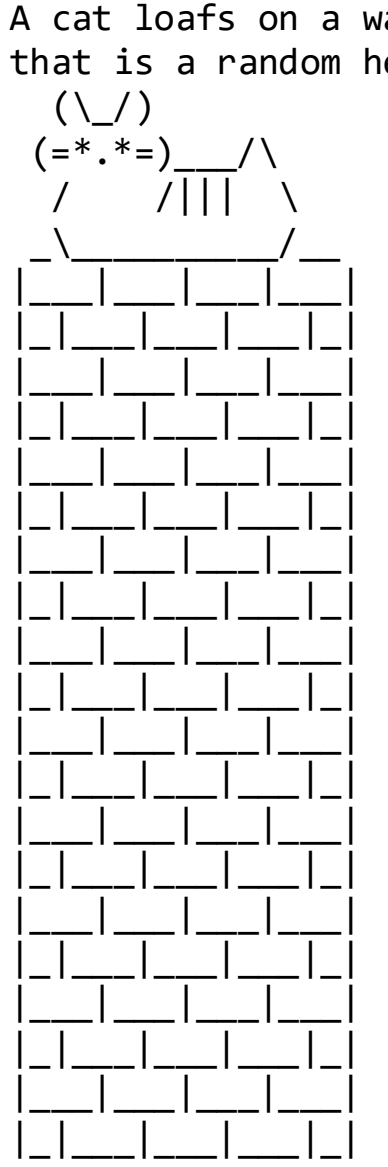


```
Most stylish: Pikachu no. 5
```

Four mountains with increasing numbers of snowflakes.



A cat loafs on a wall that is a random height



C1: Pete!

```
Task 1: This is an image of a star-shaped thing with an eye
in the middle. His name is Pete.
   ^
  _^_
 <_0_>
   Y

...

Task 3: These actually aren't all Pete! He brought his
girlfriend and boyfriend, Theresa and Nosferatu, to stand
with him.
   ^     ^     ^
  _^_   _^_   _^_
 <_0_> <_0_> <_0_>
   Y     Y     Y

Creative Option 2: How many boyfriends and girlfriends does
Pete have? Int Randy will decide!
   ^     ^     ^
  _^_   _^_   _^_
 <_0_> <_0_> <_0_>
   Y     Y     Y
```

C1 Chuckles

Cool S

```
 / \
| | |
 \ \
| | |
 \ /
```

A Sigma Matt

```
|-----|
| _ _ |
| o o |
|  ^  |
|\---/|
|-----|
```

THE CROWS ARE NOT FRIENDLY! THEY ORGANIZED!!
ITS A MURDER OF CROWS!!

```
    /--\      /--\      /--\      /--\      /--\
  _/ `* >   _/ `* >   _/ `* >   _/ `* >   _/ `* >
 <<  \  /  <<  \  /  <<  \  /  <<  \  /  <<  \  /
   \_/_/     \_/_/     \_/_/     \_/_/     \_/_/
    L  L      L  L      L  L      L  L      L  L
```

A Cat with a randomly assorted number of eyes! :3

```
 /\___/\
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o   o )
( o ᵀ o )
( U   U )ノ
```

Stewart, a joyful gentleman

```
   ___
  _|_|_
 ( ^_^ )  -[ hello pookie ! ]
  /| |\
  \|_|/
   | |
  _| |_
```

Matt the Robot!
Beep Boop Beep
Boop

```
    {*_*}
  =\| |/=
    [][]
```

```
          \(•_•)
            ) )z
            / \
       \(•_•) \(•_•)
         ) )z   ) )z
         / \    / \
    \(•_•) \(•_•) \(•_•)
      ) )z   ) )z   ) )z
      / \    / \    / \
 \(•_•) \(•_•) \(•_•) \(•_•)
   ) )z   ) )z   ) )z   ) )z
   / \    / \    / \    / \
```

A sassy pyramid of 10 dancers!

a random number of phils stacked on top of each other. all meowing a beautiful melody just for you!! they sound even better than beyonce!

```
 ^-------^
|  /   \  | < 🎵 meowwwwwwwww meow meowwww 🎵
| u  O  u |
///------\\\
    U🎸U
```

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 lost

Practice: Pair

sli.do #cse121

What is the output of this program?

```
public static void main(String[] args) {
  int x = 9;
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}
```

A. 2 and 4
9 and 3

B. 5 and -7
5 and -7

C. 9 and -3
5 and -7

D. I'm lost

Recall: Returns

Returns allow us to send values out of a method

```
public static String myMethod(String musicalAct) {
    return musicalAct + " is the best!";
}
```

Calling a method with a parameter…

```
String s = myMethod("Laufey"); // Returns
                               // "Laufey is the best!"
```

Recall: Returns versus Prints

Returns allow us to send values out of a method

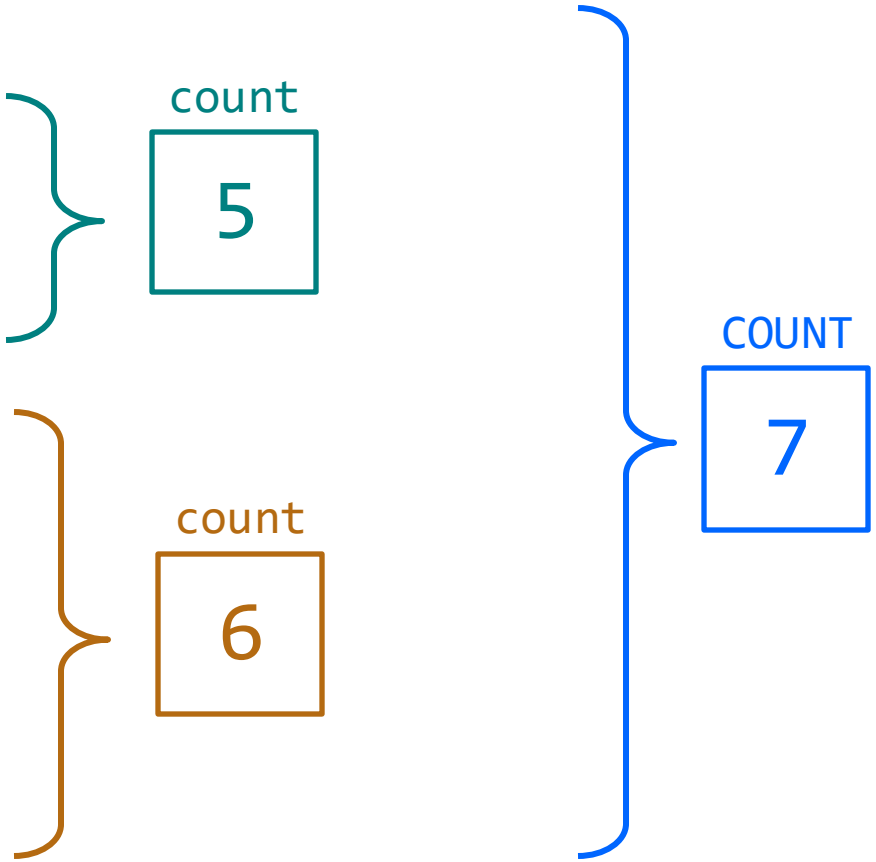
```
public static String myMethod(String musicalAct) {
    System.out.print(musicalAct + " is the best!");
    return musicalAct + " is the best!";
}
```

Calling a method with a parameter…

```
String s = myMethod("Laufey"); // Prints and returns
                               // "Laufey is the best!"
```

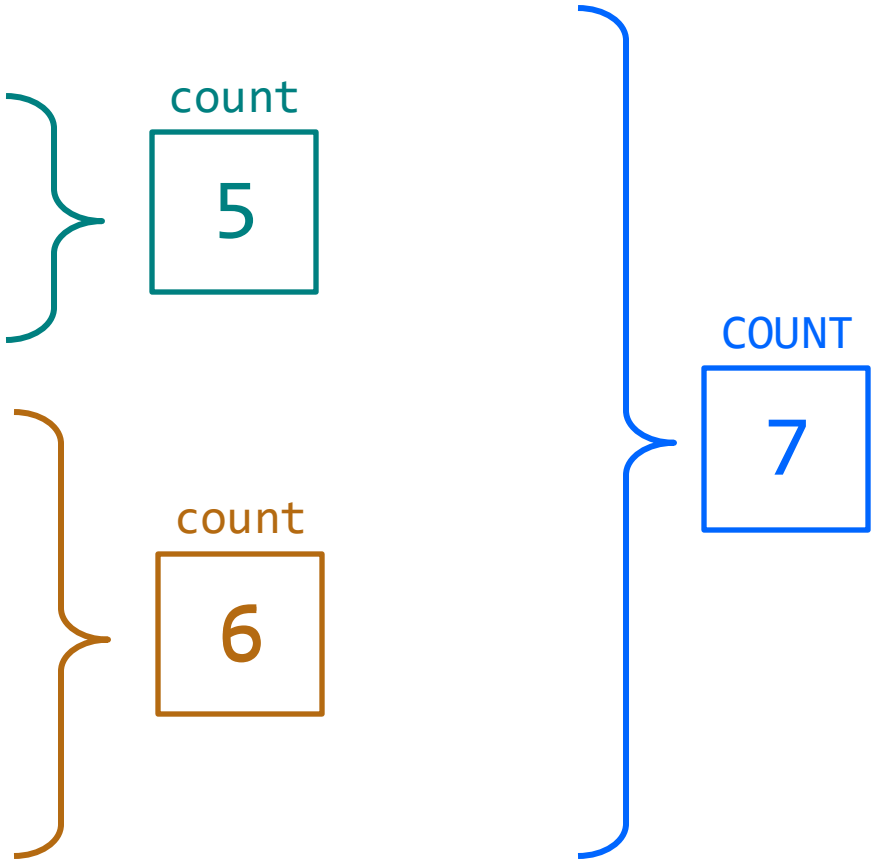
Recall: Counting Counts

```
public static final int COUNT = 7;
public static void main(String[] args) {
  int count = 5;
  line(count);
  System.out.println("count is: " + count);
}

public static void line(int count) {
  for (int i = 1; i <= count; i++) {
    System.out.print("*");
  }
  count++;
  System.out.println();
}
```



Returning Counts

```
public static final int COUNT = 7;
public static void main(String[] args) {
  int count = 5;
  count = line(count);
  System.out.println("count is: " + count);
}

public static int line(int count) {
  for (int i = 1; i <= count; i++) {
    System.out.print("*");
  }
  count++;
  System.out.println();
  return count;
}
```



Practice: Think

sli.do #cse121

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

sli.do #cse121

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

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?

New: 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);
}
```

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