

Conclusion

Administrivia

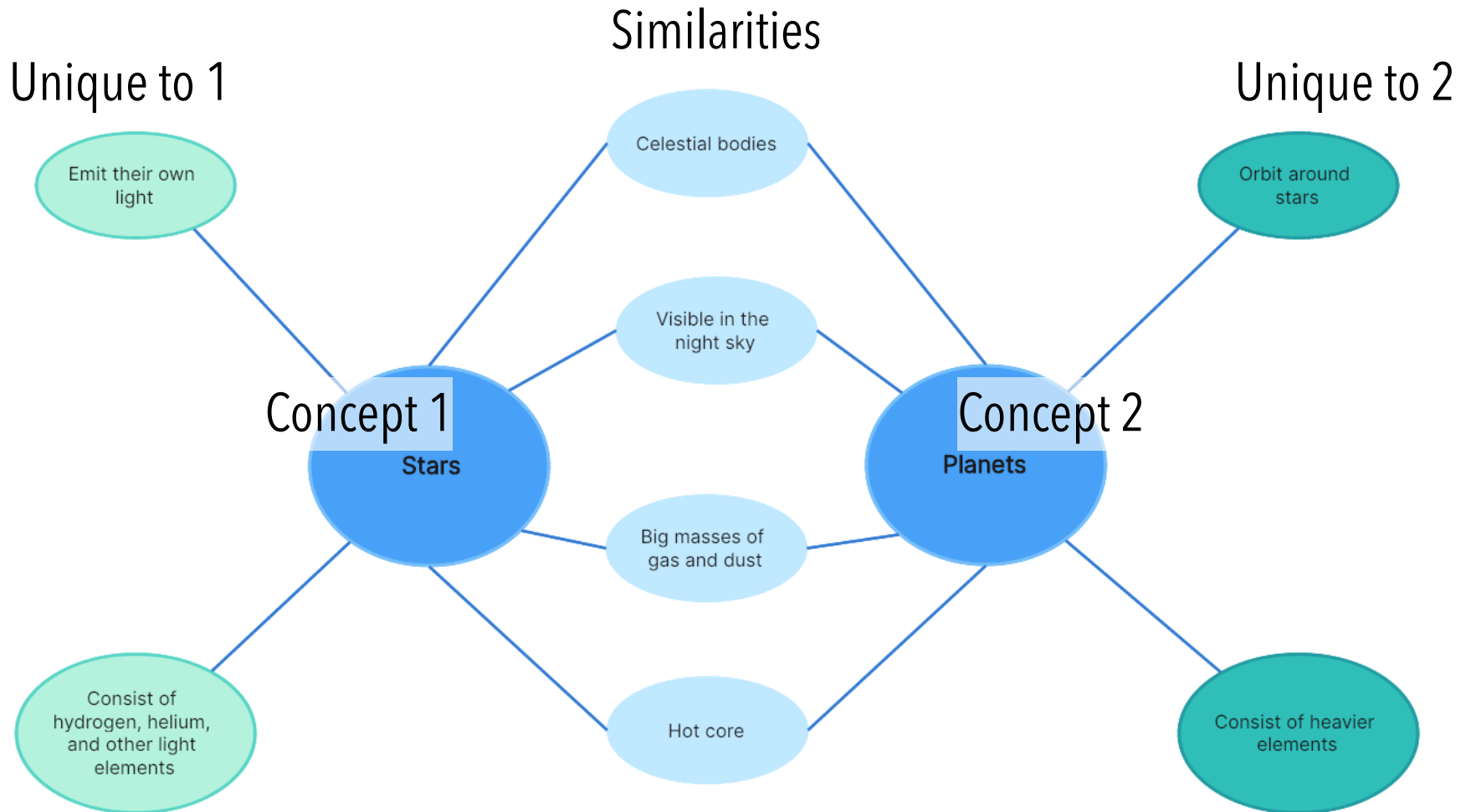
- Last day of classes!
- HW5
 - resubmission deadline: *May 17*
- Final project
 - report + deliverables: *May 15*

Agenda Today

- Make a concept map together
- Do a quiz together
- Course evals
- What's next

Concept Map (Double Bubble Map)

Double Bubble Map Example - Science



What have we learned?

- Python, intro to CS/programming
- Machine knitting

LEC 2 Variables, Types, and Expressions

LEC 3 Functions and Parameters

LEC 4 Return Values and Scoping

LEC 5 Conditionals and Boolean Logic

LEC 6 Loops, Lists and Basic Knitting

LEC 7 More Conditionals, Loops and Lists

LEC 8 Strings and File I/O

LEC 9 2D Arrays and Colorwork

LEC 10 2D Arrays and Colorwork, con't

LEC 11 Coding as Pattern Matching (Review Lect

LEC 12 Dictionaries, Sets and Tuples

LEC 13 Laces and Complexity (Slides)

LEC 14 Shaping and Illusion Knitting (Slides)

LEC 16 Classes and Objects

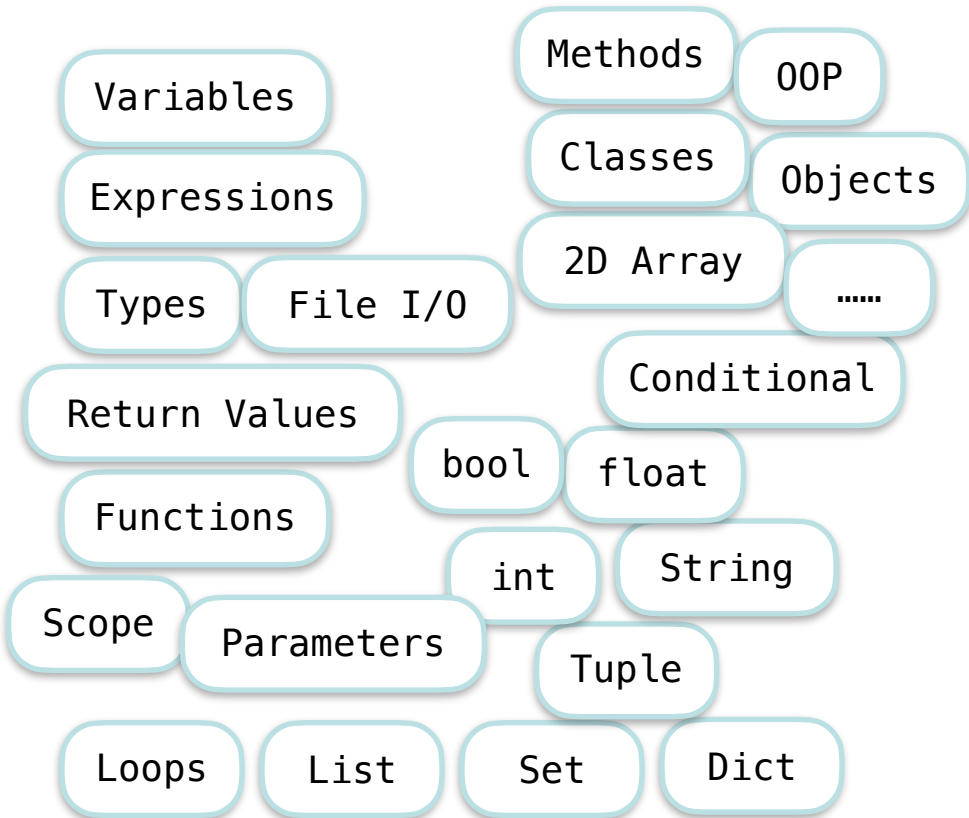
LEC 17 Methods and Designing Classes

LEC 18 Testing and Debugging OOP

LEC 19 Machine Knitting = Design with Constrains

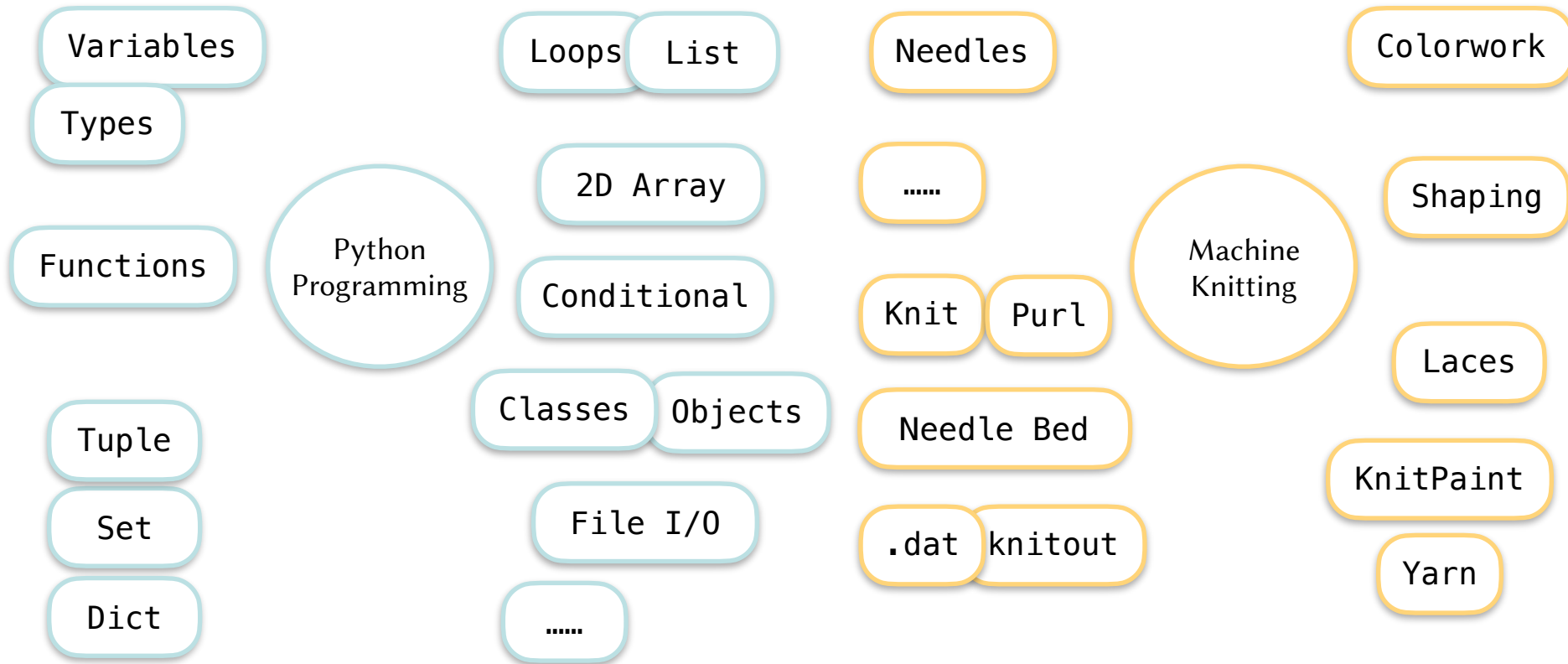
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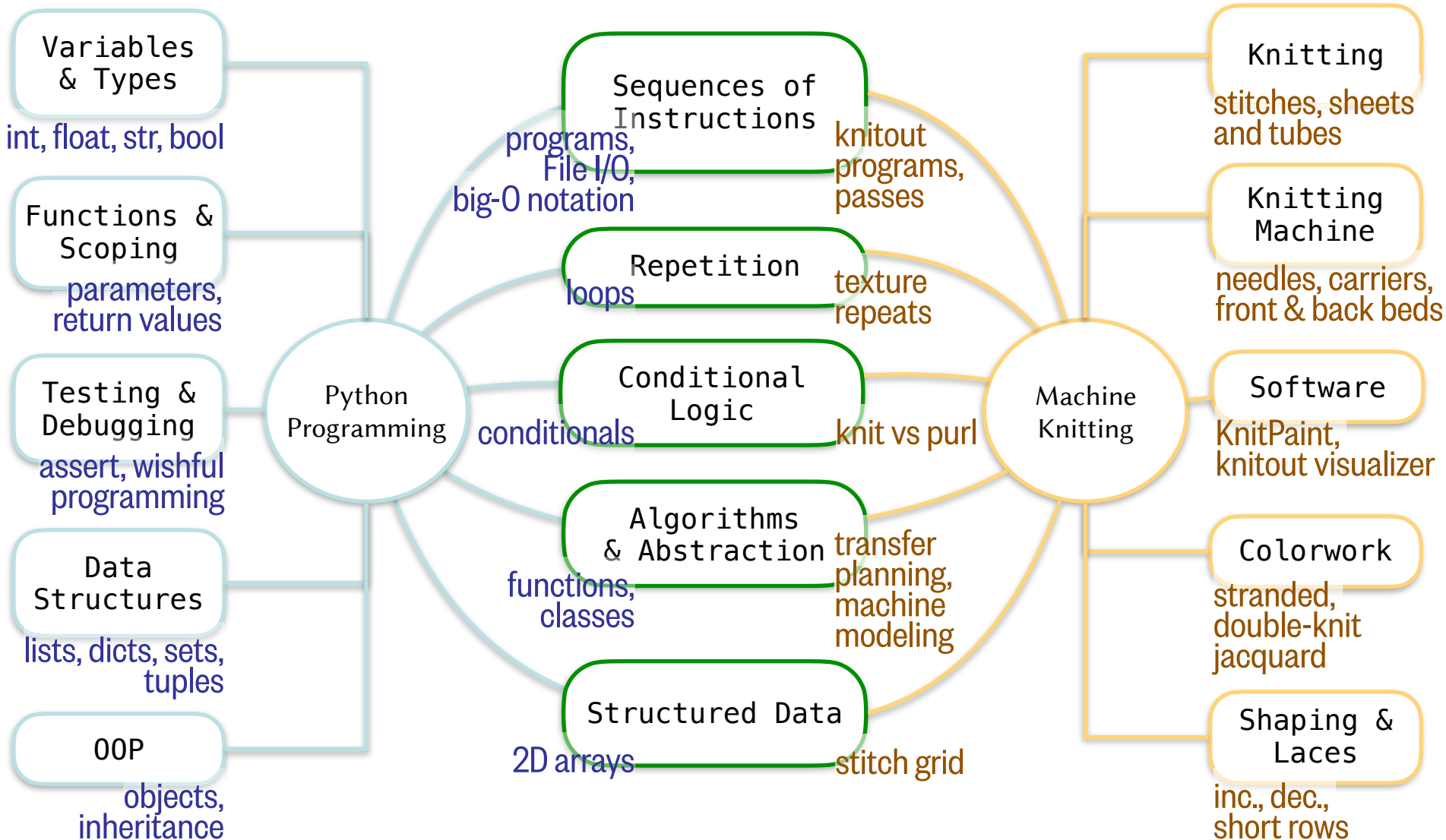


Let's Make a Double Bubble Concept Map!

How would you connect these concepts? Discuss with your neighbors!



One possible version



Quiz Questions to Test Understanding

- Let's do some quiz questions in the standard CS1 knowledge areas that were covered in this course! This can be a helpful self-evaluation on which areas you have a solid grasp of.
- We'll use questions in a style of a type of assessment call the Second CS1 Assessment, which is a research-validated instrument for measuring CS1 learning.

Q1. Programming Fundamentals

x = 5

y = 3

x = y

y = x

After this code runs, what are the values of x and y?

A. x = 5, y = 3

B. x = 3, y = 5

C. x = 3, y = 3

D. x = 5, y = 5

Q2. Logical Operators

Given an integer n , which expression is **True exactly when** n is strictly between 10 and 20 (that is, $10 < n < 20$)?

- A. $n > 10$ or $n < 20$
- B. $n > 10$ and $n < 20$
- C. not ($n < 10$ or $n > 20$)
- D. not ($n \leq 10$ and $n \geq 20$)

Q3. Conditionals

```
def classify(x):  
    if x > 0:  
        return "positive"  
    if x > 10:  
        return "big"  
    return "other"
```

What does `classify(15)` return?

- A. "positive"
- B. "big"
- C. "other"
- D. "positive" then "big"

Q4. Definite Loops

```
total = 0
for i in range(1, 5):
    total = total + i
```

What is the value of `total` after this loop?

- A. 6**
- B. 10**
- C. 15**
- D. 0**

Q5. Indefinite Loops

```
n = 16
count = 0
while n > 1:
    n = n // 2
    count = count + 1
```

What is the value of `count` after this loop?

- A. 3**
- B. 4**
- C. 5**
- D. 0**

Q6. Lists / Arrays

```
nums = [3, 1, 4, 1, 5, 9, 2, 6]
```

Which expression returns the **4th element** of the list (i.e., the value **1** that sits in the fourth position)?

- A. `nums [4]`
- B. `nums [3]`
- C. `nums (4)`
- D. `nums [-4]`

Q7. Function Parameters

```
def modify(lst, x):  
    lst.append(x)  
    x = x + 1  
    return x  
a = [1, 2, 3]  
b = 5  
c = modify(a, b)
```

What are the values of `a`, `b`, and `c` after this code runs?

- A.** `a = [1, 2, 3]`, `b = 6`, `c = 6`
- B.** `a = [1, 2, 3, 5]`, `b = 5`, `c = 6`
- C.** `a = [1, 2, 3, 5]`, `b = 6`, `c = 6`
- D.** `a = [1, 2, 3]`, `b = 5`, `c = 6`

Q8. Return Values

```
def mystery(n):  
    if n > 0:  
        n = n * 2  
    n = n + 1
```

result = mystery(5)
What is the value of result?

- A. 11
- B. 10
- C. 6
- D. None

Q9. OOP Basics

```
class Counter:
    def __init__(self):
        self.n = 0
    def tick(self):
        self.n = self.n + 1
c1 = Counter()
c2 = Counter()
c1.tick()
c1.tick()
c2.tick()
```

What is the value of `c1.n + c2.n` after this code runs?

- A. 1
- B. 2
- C. 3
- D. 6

Self-Assessment

- Which one did you feel the least certain? If you decide to pursue computing further, you can choose to brush up on those topics.

Course Evaluations

- Let's take 10~20min to do the course evaluation in class.
- Several custom questions were added after the standard set of questions to probe feedback on specific components of the course.
- This is the first iteration of this course. Your feedback will directly shape how this course evolves!

Gallery of your HW designs!

HW2

HW3

HW4

What's Next?

- This course is an introduction to both programming and computational machine knitting. After this course, there are many directions you can explore, whether or not you plan to continue in computer science.

If you enjoyed programming...

- Take another COMP course and learn about the science/theory behind it
- Apply programming to your (intended) major/projects
- Explore creative coding, data, or simulation

If you enjoyed knitting...

- Continue working with machine knitting!
- Design your own garments or textile projects, or work with art/design students, or take design courses
- Explore wearable technology or e-textiles, or just other making/fabrication techniques

If you enjoyed seeing the intersection of computing and textiles...

- Explore interdisciplinary collaborations and cross-cutting themes
 - digital humanities, data + social science, interactive art, media, design, ...
- Or more computing + textiles!
 - wearables, smart textiles, sustainable fashion and zero waste design, generative design, soft robotics, computational art, ...

What's Next?

- This course is an introduction to both programming and computational machine knitting. After this course, there are many directions you can explore, whether or not you plan to continue in computer science.
- Either way, hopefully you'll take away from this course with ideas on how to approach problems, work with physical making, and think computationally about making.

That's all!

- Have a good finals week and summer!
 - Little gift for wrapping up a great semester
- You can always email me for anything
 - I might reach out again about a show/exhibition in Usdan happening in September to showcase your final project works