

# CS21: INTRODUCTION TO COMPUTER SCIENCE

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Prof. Mathieson

Fall 2018

Swarthmore College

# Outline Sept 14:

Sit at a new computer!

- For loop recap
- Random module
- Accumulator pattern
  - `sum_loop.py` program
  - `rand_loop.py` program
  - `user_loop.py` program

More practice problems:

- `stretch.py`
- `telephone.py`

## Notes

- **Lab 1** due **Saturday** night
- **Office hours TODAY** (3-5pm in 249)
- **Ninja session TONIGHT** (7-9pm in 256)
- **Quiz 1**: next Friday (9/21), let me know about conflicts
- **Practice problems** in the practice directory (try on paper first)
- Email me if you will be **absent from class**

# Participation

- Attending class
- Participating in class (asking/answering questions)
- Attending ninja sessions & office hours \*
- Posting on Piazza (both asking and answering)

Grades will be weighted as follows:

35% Lab assignments

30% Quizzes

30% Final Exam

5% Class Participation

# Informal quiz: discuss with a partner

- 1) Fix the errors in the code below, by Student X:

A

```
# goal: print "hello!" 3 times
x = 3.0
for i in range(x):
    print("hello!")
```

B

```
# goal: print 1,2,3,4,5 on separate lines
for i in range(5):
    print(i)
```

C

```
# goal: print first ten even numbers
for i in range(10):
    print(x*2)
```

D

```
# goal: print last character of string
day = "Friday"
n = len(day)
print(day[n])
```

- 2) When I say “for i in range(4)”, does this define a new variable? If so, what value(s) does it take on?
- 3) Bonus: How could I count backward from n (even) to 0 by 2’s?

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for i in range(5):
    print(X i+1 (range starts from 0))
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Yes, *i* is implicitly defined as a new variable, and takes on the values 0,1,2,3

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Exercise! (make a new file in practice directory: “atom even\_loop.py”)

Recap last time

# square.py

```
def main():  
  
    # ask the user for an integer  
    n = int(input("Enter an integer: "))  
  
    # run the for loop n times  
    for i in range(n):  
        # for each pass through the loop, use string repetition  
        print("*"*n)  
  
main()
```

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def main():  
  
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    # run the for loop n times  
    for i in range(n):  
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        print("*"*n)  
  
main()
```

In this case the code “inside” the for loop (indented) did not depend on the loop index variable  $i$ , but often it will

# blastoff.py (example of written work)

$n=5$

$i$ (have)	want	formula
0	5	$5-0$
1	4	$5-1$
2	3	$5-2$
3	2	$5-3$
4	1	$5-4$

$n-i$

$n$   
string

```
for  $i$  in range(0):  
    print( $i$ )
```

# of items  
↓  
↑  
don't forget !!

0

# Accumulator pattern

+ random module demo



# sum\_loop.py (example of written work)

$$n = 4$$

$$S = 0 + 1 + 2 + 3 = 6 \quad \checkmark$$

$$\begin{array}{l} S = 0 \\ S = \cancel{0} + 1 \rightarrow 1 \\ S = \cancel{0} + \cancel{1} + 2 \rightarrow 3 \\ S = \cancel{0} + \cancel{1} + \cancel{2} + 3 \rightarrow 6 \end{array}$$



# Practice accumulator pattern

- Working with a partner, complete the **rand\_loop.py** code
- Move on to the **user\_loop.py** program
- More accumulator practice (with strings) in the practice directory if you finish early

- **stretch.py**

```
python3 stretch.py
Enter a string: weekend
Stretch string: wweekkeenndd
```

- **telephone.py**

```
python3 telephone.py
Enter a sentence: How was your weekend?
Transmitted sentence: Hwwsyu ekn?
```