CSE 121 Lesson 4:
For Loops

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Today’s playlist:
CSE 121 lecture beats 24sp
Announcements & Reminders

• P0 due today!
• C1 releasing later today (due Tuesday, April 16th)
• Feedback for Creative Project 0 released yesterday!
• Resubmission Cycle 0 (R0) opening tomorrow (due Thursday, April 18th)
• Reminder: IPL is open!
  • in-person at MGH 334, uses a tool called “MyDigitalHand”
  • many hours: e.g. 12:30-9:30 today! (see schedule for more)
• Quiz 0: Thursday, Apr 25th during your quiz section.
Resubmissions (or “resubs”)

Each week, you may resubmit one Programming Assignment or Creative Project with no penalty. The grade of your resubmission will completely replace your previous grade.

This is a huge opportunity: you get to resubmit your work after we grade it and give you feedback! Please take advantage of this :) 

(if you miss an assignment and/or only finish it late – use a resub!)
Resubmissions (or “resubs”)

Some logistics:
• there are 8 total resub cycles this quarter (and... 8 assignments...)
• an assignment is only eligible for resubmission for 3 cycles after feedback is released

To resubmit, you should:
• set the submission you want to be graded as “Final”
• submit a Google form to confirm your resubmission
  • you must fill out the form before the deadline for your resub to count!
Last Time...

- Variables
  - Container that stores a specific data type
  - Must declare & initialize!
  - Manipulate, modify, reuse

- Strings
  - Sequence of characters treated as one, yet can be indexed as individual parts
  - char, represents a single character

```
// declare AND initialize
int version = 5;
```
Debugging – Live!

In P0, we asked you to do some debugging.

This is arguably the most important skill when programming – especially because programming is a social activity!

Let’s do some live debugging :)
(PCM) for loops!

For loops are our first control structure
A syntactic structure that controls the execution of other statements.

```
for ( initialization ; test ; update ) {
    body (statements to be repeated)
}
```
for (int counter = 1; counter <= 5; counter++) {
    System.out.println("I love CSE 121!");
}
(PCM) for loops! 3

1. Perform the initialization once at the beginning.

2. Is the test true?
   - NO: Execute the statements that are immediately after the for loop body.
   - YES: Execute the statements inside the for loop body.

3. Execute the statements inside the for loop body.

4. Perform the update.

5. Execute the statements that are immediately after the for loop body.
for (int counter = 1; counter <= 5; counter++) {
    System.out.println("I love CSE 121!");
}
What output does the following code produce?

```java
for (int i = 1; i <= 6; i++) {
    System.out.println(i + " squared = " + i * i);
}
```

<table>
<thead>
<tr>
<th>A.</th>
<th>B.</th>
<th>C.</th>
<th>D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>1 squared = 1</td>
<td>1 squared = 1</td>
</tr>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>2 squared = 4</td>
<td>2 squared = 4</td>
</tr>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>3 squared = 9</td>
<td>3 squared = 9</td>
</tr>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>4 squared = 16</td>
<td>4 squared = 16</td>
</tr>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>5 squared = 25</td>
<td>5 squared = 25</td>
</tr>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>6 squared = 36</td>
<td>6 squared = 36</td>
</tr>
<tr>
<td>i squared = i * i</td>
<td>i squared = i * i</td>
<td>7 squared = 49</td>
<td></td>
</tr>
</tbody>
</table>
(PCM) String traversals

// For some String s
for (int i = 0; i < s.length(); i++) {
    // do something with s.charAt(i)
}
Fencepost Pattern 1

Some task where one piece is repeated $n$ times, and another piece is repeated $n-1$ times and they alternate

h-u-s-k-i-e-s
Fencepost Pattern 2

Some task where one piece is repeated $n$ times, and another piece is repeated $n-1$ times and they alternate.