CSE 115
Introduction to Computer Science I
Happy last day!
FINAL EXAM

Tuesday, December 11, 2018
7:15 PM - 10:15 PM
SOUTH CAMPUS

(Bus schedules posted)
<table>
<thead>
<tr>
<th>ROOM</th>
<th>LAST NAMES</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFN 146</td>
<td>Abbot - Deslippe</td>
</tr>
<tr>
<td>DFN 147</td>
<td>Dingel - MacNamara</td>
</tr>
<tr>
<td>DFN 148</td>
<td>MacRae - Sadiq</td>
</tr>
<tr>
<td>FARBER 144</td>
<td>Saha - Tallman</td>
</tr>
<tr>
<td>FARBER 150</td>
<td>Tan - Zurek</td>
</tr>
</tbody>
</table>
Review Sessions

(A) Sat 12/8 2:00PM - 4:00PM in NSC 215

(B) Sat 12/8 6:00PM - 8:00PM in NSC 215

(C) Mon 12/10 2:00PM - 4:00PM in CAPEN 262

Capen 262 is quite a bit smaller than NSC 215, so if you can attend on Saturday please do, and leave Monday's session for students who are unable to attend on Saturday.
Module 1 topics

Expressions (e.g. literals, variables, compound expressions)
Operators (numeric, string, boolean, relational)
Assignment statement
Function definitions (parameters)
Function calls (arguments)
Flow of control (sequences, conditionals)

Python syntax
JavaScript syntax
+vocabulary +UBIInfinite exercises +lecture examples +lecture activities +lab activities
Module 2 topics

Arrays (JS), Lists (PY)
Dictionaries (JS/PY)
Loops (JS: for, for...in, for...of) (PY: for...in, range)
Accumulation code pattern (various examples)
File reading, file writing, CSV library

Python syntax
JavaScript syntax
+vocabulary +UBInfinite exercises +lecture examples +lecture activities +lab activities
Module 3 topics

HTML (<div id="X">, <script>, <body onload=""..."">)
JSON (stringify/parse, dumps/loads)
libraries (plotly, bottle, etc)
client/server interaction (requests and responses)
AJAX GET and POST requests

+vocabulary +UBInfinite exercises +lecture examples +lecture activities +lab activities
Module 4 topics

Algorithms
- linear vs binary search
- selection sort vs. merge sort vs Tim sort

Custom sorting - comparator function in JS, key function in PY

Databases (sqlite) - create table, insert into table, select from table

Injection attacks (HTML, SQL)

Risks of technology, Codes of Ethics

Encryption (symmetric key encryption vs public/private key encryption)

Hashing and salting

HTTPS and certificates

+vocabulary +UBInfinite exercises +lecture examples +lecture activities +lab activities
Module 3 Sample Questions

1) What is JSON? What is it used for? Demonstrate how to convert { 'a':1, 'b':2 } to JSON in JS, and how to convert "{ 'a':1, 'b':2 }" from JSON in PY.

2) What does a <script> tag in HTML do?

3) How can a client send data to a server?

4) What is a callback function?

5) What is meant by asynchronous communication?
Module 4 Sample Questions

1) List these sorting algorithms from slowest to fastest: Tim sort, selection sort, merge sort. How is Tim sort related to the other two?

2) Given an array of values ordered from smallest to largest, show the indices checked by binary search when searching for a specific value.

3) Demonstrate how to custom sort an array of key-value stores on the 'last_name' value. (JS / PY)

4) Define a comparator for first name - last name pairs, so they are ordered first by last name, then by first name (Jones comes before Smith, and Bree Jones comes before David Jones).

5) What is an injection attack and how can you guard against it?

6) How does public key encryption solve the problem of key distribution?

7) Why is important to add salt to passwords before hashing them?
What questions do you have?
Happy last day!

See you at the final :-)