CS 160
CS Orientation
Expressions, Data Types, & Input/Output
Data

• Video: Explaining Big Data...
Data Types/Converting

• string - “string of text”
• character – ‘a’
• integer – 79
• boolean – True
• float – 79.0
Python Operators and Their Computer Symbols

- +
- -
- *
- /
- //
- %
- **
Hierarchy of Operations

- Functions, i.e. math.sqrt()
- Power
- Mod
- Mult, Div
- Add, Sub
- Relational
- Logical
Python Examples

• $5 \times 2 + 3 - 10$
• $5 \times (2 + 3) - 10$
• $5/2$
• $5//2$
How about storing values?

• ch = ‘a’
• num = 79
• cont = True
• num = num + 1
• Can we mix types?
  – num = num + continue
  – num = num + ch
  – ch = ch + num
# Expressions and Equations

<table>
<thead>
<tr>
<th>Expressions</th>
<th>Equations</th>
</tr>
</thead>
<tbody>
<tr>
<td>$A + B$</td>
<td>$C = A + B$</td>
</tr>
<tr>
<td>$A$ and $B$ are numeric.</td>
<td>$C$, $A$, and $B$ are numeric.</td>
</tr>
<tr>
<td>The resultant is numeric and is not stored.</td>
<td>The resultant is stored in $C$.</td>
</tr>
<tr>
<td>$A &lt; B$</td>
<td>$C = A &lt; B$</td>
</tr>
<tr>
<td>$A$ and $B$ are numeric, character, or string.</td>
<td>$A$ and $B$ are numeric, character, or string.</td>
</tr>
<tr>
<td>The resultant is logical and is not stored.</td>
<td>The resultant is stored in $C$; $C$ is logical.</td>
</tr>
<tr>
<td>$A$ OR $B$</td>
<td>$C = A$ OR $B$</td>
</tr>
<tr>
<td>$A$ and $B$ are logical.</td>
<td>$C$, $A$, and $B$ are logical.</td>
</tr>
<tr>
<td>The resultant is logical and is not stored.</td>
<td>The resultant is stored in $C$.</td>
</tr>
</tbody>
</table>
Python Demo/Expressions
Sequential Logic Structure

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Flowchart</th>
<th>Pseudocode</th>
</tr>
</thead>
</table>
| 5. Instruction  
6. Instruction  
7. Instruction  
8. Instruction | Instruction  
Instruction  
Instruction | Instruction  
Instruction  
Instruction |

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Python Sequential Logic

print("   *   ")
print("  ***  ")
print(" ***** ")
print("*******")
print("*********")