CS 160
CS Orientation

Data Types, Conditionals, and Repetition
Data Types/Converting

- string - “string of text”
- character – ‘a’
- integer – 79
- boolean – True
- float – 79.0
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
Python **Data Type** Demo...
Sequential Logic Structure

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

<table>
<thead>
<tr>
<th>Flowchart</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
Instruction  
|  
Instruction  
|  
Instruction  |

<table>
<thead>
<tr>
<th>Pseudocode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>
: |
|  
Instruction  
Instruction  
Instruction  |
|  : |
Python Sequential Logic

print("   *   ")
print("  ***  ")
print(" ***** ")
print("*******")
print("********")
Decision Logic Structure

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Flowchart</th>
<th>Pseudocode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. If &lt;decision&gt; then</td>
<td>Decision Instruction</td>
<td>If &lt;decision&gt; then</td>
</tr>
<tr>
<td></td>
<td>Instruction</td>
<td>Instruction</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>else Instruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Endif</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

OSU Oregon State University
Python Decision Logic:
Print 1, 3, 5, or 7 stars
Differences/Similarities in these?

```python
x=int(input("Print 1, 3, 5, 7 stars?"));

if(x==1):
    print("   *   ")
elif(x==3):
    print("  ***  ")
elif(x==5):
    print(" ***** ")
elif(x==7):
    print("*******")
```

OSU Oregon State University
Python Decision Logic:
Print 1, 3, 5, or 7 (for any other #) stars
Differences/Similarities in these?

```python
x=int(input("Print 1, 3, 5, 7 stars?
"));

if(x==1):
    print("   *   ")
if(x==3):
    print("  ***  ")
if(x==5):
    print(" ***** ")
else:
    print("*******")
```

```python
if(x==1):
    print("   *   ")
elif(x==3):
    print("  ***  ")
elif(x==5):
    print(" ***** ")
else:
    print("*******")
```
Python Conditional Demo...
Loop Logic Structure

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Flowchart</th>
<th>Pseudocode</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><img src="" alt="Diagram" /></td>
<td><img src="" alt="Diagram" /></td>
</tr>
</tbody>
</table>

5. Loop
   Instruction
   Instruction
   Instruction
   Until <logical expression>

6. :
Python Loop Logic

for x in range(7):
    print("*", end="")

OR

x=1
while(x<=7):
    print("*", end="")
    x+=1
Python While Demo...

• While the user wants to continue to enter a number for stars to print...
Functions

• May need to import a library
• Use the function from library/object
• Example:
  
  import math
  math.sqrt(4)
Programming Demo/Functions