CS 160
CS Orientation

Input/Output, Conditionals, and Loops
Relational Operators and Symbols

- >
- >=
- <
- <=
- ==
- !=

```plaintext
if ($ > = 20$)
    eat at Flat Tails
else if ($ > = 10$)
    eat at subway
else
    stay home & eat
```
Logical Operators and Symbols

- **not**

<table>
<thead>
<tr>
<th>not F</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>not T</td>
<td>F</td>
</tr>
</tbody>
</table>

- **and**

  | T and T | T |
  | T and F | F |
  | F and T | F |
  | F and F | F |

- **or**

  | T or T | T |
  | T or F | T |
  | F or T | T |
  | F or F | F |
Python Examples

• not True or False
• 3 > 2 + 4
• True and True or True and False
• ((True and True) or True) and False
• not 3 < 2 and True or False
Python Decision Logic:
Print 1, 3, 5, or 7 stars

Differences/Similarities in these?

```
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("*******");
```
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("*******")
```
Exercise

• Write an algorithm that will tell a user whether they have entered a valid triangle using the triangle inequality property (any sum of 2 sides cannot be less than the third side).
#prompt user for side 1
#read side1 value
#prompt user for side 2
#read side2 value
#prompt user for side 3
#read side3 value

#if(side1+side2 < side3)
    #print not a triangle
#else if(side1+side3 < side2)
    #print not a triangle
#else if(side2+side3 < side1)
    #print not a triangle
#else
    #print a good triangle

#if((side1+side2 < side3) or (side2+side3 < side1) or (side1+side3 < side2))
    #print not a triangle
#else
    #print a good triangle
Loop Logic Structure

Algorithm

5. Loop
   Instruction
   Instruction
   Instruction
   Until <logical expression>

6. :

Flowchart

Pseudocode

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
Exercise

• How about if we alter this to allow a user to do this for any number of triangles?

1️⃣ maybe ask user how many triangle they want to check & for each triangle, ask sides & check if good

2️⃣ while the user wants to check a triangle, ask for sides & check if good