Announcements

• Reminders:
  – MPL Assignment 1 due on 9/10 by 11:59pm
  – Program #1 due on 9/11 by 11:55pm

Output

```python
print function

print("Jane Doe")
age = 50
print(age)
print("Jane is", age, "years old")
```

Making Output Pretty

```python
• format function

print(format(0.5, '.0%'))  # 50%
print(format(1234567, ',d'))  # 1,234,567
num = 234.555555
print(format(num, '.2f'))  # 234.56
print("The number is", format(num, '.2f'))
```

For more formatting examples, see pages 68-73 in book
Making Output Pretty

# Using escape characters
print("Mon\tTues\tWed\nThurs\tFri\tSat")

# Output looks like
Mon  Tues  Wed
Thurs Fri  Sat

Making Output Pretty

# Print multiple lines of output using
# only 1 print statement
print("one", "two", "three", sep='\n')

# Output looks like
one
two
three

Input from Keyboard

- **input** function
  - For strings:
    ```python
    variable = input("Prompt")
    ```
  - For integers:
    ```python
    variable = int(input("Prompt"))
    ```
  - For floats:
    ```python
    variable = float(input("Prompt"))
    ```

Finish Demo

formatInputOutput.py in Public directory
Class Activity

1. Modify your food program from Friday (burger and fries).
   a) Prompt the user for the price of a burger and the price of fries instead of having those values hard-coded in.
   b) Prompt the user for the total number of burgers and fries they would like.
   c) Calculate the total bill using the inputted values instead of the hard-coded values – output the total cost of the burgers & fries.
   d) Add tax to the total cost and print out the total with tax.

The if Statement

The if Statement (cont’d.)

- Python syntax:
  
  ```python
  if condition:
      Statement
      Statement
  ```

- First line know as the if clause
  - Includes the keyword if followed by condition
    - The condition can be true or false
    - When the if statement executes, the condition is tested, and if it is true the block statements are executed. Otherwise, block statements are skipped

The if Statement Examples

```python
if a < b:
    print("a is less than b")

if a > b:
    print("a is greater than than b")

if a <= b:
    print("a is less than or equal to b")

if a >= b:
    print("a is greater than or equal to b")
```
Boolean Expressions and Relational Operators

- **Boolean expression**: expression tested by if statement to determine if it is true or false
  - Example: \( a > b \)
    - true if \( a \) is greater than \( b \); false otherwise
- **Relational operator**: determines whether a specific relationship exists between two values
  - Example: greater than (\( > \))

<table>
<thead>
<tr>
<th>Expression</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>( x &gt; y )</td>
<td>( x ) greater than ( y )?</td>
</tr>
<tr>
<td>( x &lt; y )</td>
<td>( x ) less than ( y )?</td>
</tr>
<tr>
<td>( x \geq y )</td>
<td>( x ) greater than or equal to ( y )?</td>
</tr>
<tr>
<td>( x \leq y )</td>
<td>( x ) less than or equal to ( y )?</td>
</tr>
<tr>
<td>( x = y )</td>
<td>( x ) equal to ( y )?</td>
</tr>
</tbody>
</table>
| \( x 
eq y \) | \( x \) not equal to \( y \)? |

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### Code with an If-Statement

```python
# This program calculates your exam average.
exam1 = int(input("What is your first exam score? "))
exam2 = int(input("What is your second exam score? "))
exam3 = int(input("What is your third exam score? "))
average = (exam1 + exam2 + exam3) / 3

choice = input("Did you do the extra assignment? (yes or no)")
if choice == "yes"
    average = average + 5

print("Your exam average is ", average)
```

Saved as exam-if.py in my Public directory
The if-else Statement

The if-else Statement

If-Else Example

```
# This program calculates your exam average.
exam1 = int(input("What is your first exam score? "))
exam2 = int(input("What is your second exam score? "))
exam3 = int(input("What is your third exam score? "))
average = (exam1 + exam2 + exam3) / 3

choice = input(\"Did you do the extra assignment? \")
if choice == \"yes\":
    print("Your exam average is", average + 5)
else:
    print("Your exam average is", average)
```

Saved as if-else.py in my Public directory

Comparing Strings

• Strings can be compared using the == and != operators
• String comparisons are case sensitive
• Strings can be compared using >, <, >=, and <=
  – Compared character by character based on the ASCII values for each character
  – If shorter word is substring of longer word, longer word is greater than shorter word

```
Mary
  77 97 114 121
Mark
  77 97 114 110
```
Using String Comparisons

```python
#This program takes in 2 names and prints them out in alphabetical order
name1 = input("Enter name 1: ")
name2 = input("Enter name 2: ")

print("Here are the names, listed alphabetically.")
if name1 < name2:
    print(name1)
    print(name2)
else:
    print(name2)
    print(name1)
```

Practice

- Write a program that prompts a user for his or her age and prints out whether or not they are (legally) allowed to drink alcohol.

Next Time

- Nested Decision Structures
- if-elif-else Statement
- Sections 3.4-3.6