KEY CONCEPTS:

1. We create separate branches in code or make decisions using the `if…` Statement

   The general format format for the statement is as follows:

   ```
   if condition:
       statement 1
       statement 2
   ```

   Example:

   ```
   length = 30
   breadth = 30
   if length == breadth:
       print("Length and breadth are equal")
   ```

   Things to pay attention to:
   a. There is a colon sign (:) after the condition statement
   b. You need to insert a tab (or 4 spaces) to indent the statements that will be executed if the condition is true
   c. When testing for equality, you need TWO equal signs `==`

2. OPTIONALLY, you can test for multiple conditions one after the other by using the `elif` clause.

   The general format format for the statement is as follows:

   ```
   if condition1:
       statement 1
       statement 2
   elif condition2:
       statement 3
       statement 4
   ```

   Here if condition1 is true, statements 1 and 2 will be run. IF the condition1 is false, then condition2 will be tested, and if that is true, the next code block (statements 3 and 4) will run

   Example:

```
length = 30
breadth = 30
if length != breadth:
    print(“Length and breadth are not equal”)
elif length == breadth:
    print(“Length and breadth are equal”)
```

Things to pay attention to:

a. There is a colon sign (:) after the condition2
b. You need to insert a tab (or 4 spaces) to indent the statements that will be executed if the condition is true
c. When testing for inequality, we use `!=`

3. OPTIONALLY, you can have a set of statements executed if NONE of the conditions are true using the `else` clause.

   The general format format for the statement is as follows:

```
if condition1:
    statement 1
    statement 2
elif condition2:
    statement 3
    statement 4
else:
    statement 5
```

   Here if NONE of the tested conditions are true, statement 5 will be run.

   Example:

```
length = 30
breadth = 30
if length > breadth:
    print(“Length is greater than breadth”)
elif length == breadth:
    print(“Length and breadth are equal”)
else:
    print(“Breadth is greater than length”)
```

   Note, There is a colon sign (:) after `else`

4. We have also learned how to ask the user for input using the input function. The function loads the date entered by the user into the variable. Example:

   ```
   f_name = input("Please enter your name: ")
   ```

   Or

   ```
   number_a = input("Please enter your favorite number: ")
   ```

   The text within the quotes is called the prompt and show up on the screen to tell the user what to enter - please be as descriptive as needed.

   When prompting for numbers, it is useful to "cast" the entered value into a certain type, say `int()` for integer or `float()` for decimal

   Example:

   height = int(input("Please enter the height of the triangle: "))

5. Variable can be of type boolean, and hold values of True or False. Example:

   ```
   variable1 = True
   variable2 = False
   ```

   We learned about truth tables for NOT, AND, OR, NAND and XOR

6. For numbers, in addition to +, -, * and / operators, we leaned:
   // returns the quotient and
   % returns the remainder (modulus)

HOMEWORK: DUE IN TWO WEEKS (Nov 16)

1. On a piece of paper, please create the truth table for the NOR operator - this would be a combination of a NOT after an OR operation.

2. PROBLEM 1
   A. Code a simple calculator. Ask the user to enter two numbers and load them into two variables - say `number1` and `number2`.
   B. Calculate and print the area of a triangle if the two numbers were the height and base.
   C. Calculate and print the area of a square as if the first number were the length of a side
   D. Calculate and print the area of the circle as if the second number were the radius.

Hint: remember to use int() with the input() function as shown in class and the example above

3. PROBLEM 2
Code a simple Mad Libs game.
A. Ask the user for a few words and load them into variables for example: a type of food, name, an adjective, a noun, etc.
B: Tell a short story using the information collected in step A.

Have fun with this!!!! If you want an example of this game, check out https://assets.readbrightly.com/wp-content/uploads/2020/08/Election-Mad-Libs-If-I-Were-President.pdf

4. Write a program to:
A. Ask the user for a word and store it in a variable
B. Ask the user to enter the same word again
C. If the user entered the word again correctly, print “your words match”
D If they don’t, print “Your words don’t match, please try again”

5. Write a program to:
   A. Ask the user for a number between 1 and a 100
   B. If the number is divisible by 2, print “Your number is even”
   C. If it is divisible by 3, print “Your number is divisible by 3”
   D. If it is divisible by 5, print “ your number is divisible by 5”
   E. Otherwise, print “Your number is not divisible by 2, 3 or 5”

Class code can be accessed at:
ifthen.ipynb
And
Boolean.ipynb