CS215 Ch 3D Lab – Using breaks/else's with loops **Name:** Jake Gadaleta

- Our goal in this lab is to analyze prime numbers and to use breaks/else's in loops to help us do so. At the end of this lab, you will have written code so that for each number up to some given cutoff, your program indicates that the number is prime or the number is factored so that it is clear that it is is not prime. For example, if a user were to enter 10 or 18, the user would see these outputs.

```
Enter a positive integer: 10
2 is a prime number
3 is a prime number
4 equals 2 * 2
5 is a prime number
6 equals 2 * 3
7 is a prime number
8 equals 2 * 4
9 equals 3 * 3
10 equals 2 * 5
```

```
Enter a positive integer: 18
2 is a prime number
3 is a prime number
4 equals 2 * 2
5 is a prime number
6 equals 2 * 3
7 is a prime number
8 equals 2 * 4
9 equals 3 * 3
10 equals 2 * 5
11 is a prime number
12 equals 2 * 6
13 is a prime number
14 equals 2 * 7
15 equals 3 * 5
16 equals 2 * 8
17 is a prime number
18 equals 2 * 9
```

- First, some math thoughts:
  Fill in the blanks below so that if an integer n is is divisible by an integer x, then n is factored as x times the appropriate integer. For example, if n = 15 and x is 3, we want "15 equals 3 * 5" to print out.

```
if ____n % x == 0_____:
    print(f"{n} equals {x} * {_____n/x_____}")
```

- With this in mind, copy and paste the Primes.py posted with this lab into Spyder. Read the comments/pseudocode (pasted below for ease). Then use these comments to write code that produces the desired output. ***Note: Your code should use a break/else with a loop so that you get practice with these ideas.*

```
#ASK THE USER FOR AN INTEGER - CALL IT n
#FOR EACH INTEGER FROM 2-n:
      #Loop over the integers less than n and see if any
      #divide n.  As soon as one does, print n as a product
      #(so as to prove n is not prime) and then break out of the
      #loop.

      #In the else loop of the loop (which would only be
      #called if we did NOT break out of the loop, meaning that
      #n is indeed prime) print that x must be prime.
```

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SUBMISSION INFO

TO GET CREDIT FOR THIS LAB, UPLOAD THESE 2 DOCUMENTS TO THE SUBMISSION AREA.

- LabCh3D.pdf (should have your guess work)
- Primes.py (make sure you update the header with your name)