

day42 Prime number finder
Due Thursday 12/3/20 by 5pm

Your task is to write a program that finds and prints all the prime numbers between whatever two numbers the user enters. For example, if the user enters 3 and 11, your program will print the following:

```
We're going to find prime numbers.  
Enter the first number: 3  
Enter the last number: 11  
3  
5  
7  
11  
4 prime numbers found between 3 and 11
```

Make sure your program actually checks the last number, as shown above. See that it checked and found that 11 was prime?

Tips:

1. Ask the user for two numbers using two input lines. Be sure to do `int(input())`, like this:

```
first = int(input("Enter the first number: "))
```

2. Create a variable **count** and put 0 into it. This is where you will keep track of how many prime numbers you have found. (`count = 0`)

3. Do a for loop with a variable **num** that goes from the first number to the last number. You'll have to do it like this:

```
for num in range(first, last+1):
```

because the range call always does 1 less than the second number.

4. Inside, make a variable **factors** and set it to 0.

5. Do a for loop that goes from 1 to num, for `x in range(1, num+1)`:

6. Check if num is divisible by x evenly (you use the % operator: `if num%x==0:`) If it is divisible evenly, add one to the variable factors.

7. After the inside for loop is over, check if the variable factors is equal to 2. If it is, print num, because it is prime (prime numbers are only divisible by themselves and the number one, which means if you found 2 factors you found a prime number.) Also, add one to the count variable, because it means you found a prime number. That would be `count = count + 1`.

8. When the main for loop is over, print a summary line that gives the count, the first and the last numbers checked, like this: "4 prime numbers found between 3 and 11".

See next page for more sample runs

```
We're going to find prime numbers.
Enter the starting number: 1111
Enter the ending number: 1193
1117
1123
1129
1151
1153
1163
1171
1181
1187
1193
10 prime numbers found between 1111 and 1193
```

```
We're going to find prime numbers.
Enter the starting number: 1000000
Enter the ending number: 1000500
1000003
1000033
1000037
1000039
1000081
1000099
1000117
1000121
1000133
1000151
1000159
1000171
1000183
1000187
1000193
1000199
1000211
1000213
1000231
1000249
1000253
1000273
1000289
1000291
1000303
1000313
1000333
1000357
1000367
1000381
1000393
1000397
1000403
1000409
1000423
1000427
1000429
1000453
1000457
39 prime numbers found between 1000000 and 1000500
43.70153522491455 seconds
or 0.7283589204152425 minutes
```

In my last example I added code to keep track of how long the whole run took. You can do that if you want. Add "import time" at the top, then before the main for loop say `startTime = time.time()`. Then after you print the summary message, say `endTime = time.time()`. Then to see how many seconds the whole thing took you subtract `startTime` from `endTime`:

```
print(endTime-startTime,"seconds")
```

This is optional, I just wanted to share it.