Kerry Ojakian's CSI 31 Class

Class Assignment #4

General Instructions:

- You may work in a group of at most 3 students.
- Classwork must be put in a your dropbox folder; if there are multiple parts, create a single folder for the class assignment. Make sure you give clear names to your files and folders. Make sure that you indicate all the people in your group.
- When you are done, email me to tell me who's folder the class work is in; also, tell me who is in your group.

The Assignment

1. *Without typing the following program into the computer determine its output; justify your answer.*

```
def myFunct(L,x):
      L[2] = L[3]
      x = x + 10

      return x


x = 577
myList = ['good', 8, 'aunt', 'be', 100]

rVal = myFunct(myList, x)

print("Function return:", rVal)
print("x:",x)
print("myList:", myList)
```

2. Write a **function** that takes a numerical grade as input (a number between 0 and 100, inclusive) and outputs a letter grade (i.e. appropriate string), using the following scheme:

   - 95 or larger: A+
   - At least 90 and less than 95: A
   - At least 80 and less than 90: B
   - At least 60 and less than 80: C
   - Less than 60: F

3. Write a function `CountTwinPrimes` to count the number of twin primes such that both numbers are less than the given input. For example, on input 13, the output should be 2; while on input 14, the output should be 3. Write your program following these steps:

   (a) First write the `CountTwinPrimes` function assuming you have a function `prime`. The function `prime` takes a number as input and returns `True` if the given number is prime and returns `False` if the given number is not prime.

   (b) Then write (or copy in) the `prime` function.

   (c) Use the `prime` function to complete the `CountTwinPrimes` function.

4. (Extra Credit) Do you think there are infinitely many twin primes? Use your program to gather evidence for or against. You will get extra credit for giving a thoughtful answer to this question.