CSCI 127, Final Practicum – December 9, 2019

Name _____

Question One. 25 points. Create a file named **currency.txt** that contains the following lines:

10-Euro-1.11
20.34-Pound-1.31
100-SwissFranc-1.01
99888.50-SriLankanRupee-0.0055

The first line indicates that you own 10 euros and that a euro is worth $1.11. The other lines contain similar information about other currencies.

Write the missing function below by reading the file using the technique we studied in Chapter 11 (Files) of the interactive textbook. Do not make any assumptions regarding the number of lines that the file might contain.

For this particular file, **calculate("currency.txt")**, should produce this exact output:

Value = $688.13

Question Two. 25 points. Supply the missing class and methods such that when this code is run:

```
r1 = Rectangle("Rectangle 1", 5, 6)        # 5 is the height, 6 is the width
print(r1)
s1 = Square("Square 1", 7)                 # 7 is the length of a side
print(s1)
```

this exact output is produced:

```
Rectangle 1 has area 30
Square 1 has area 49
```

Use inheritance to solve this problem. You solution should use as few lines as possible.

Question Three. 25 points. Supply the missing function such that when this code is run:

```
import numpy as np

size = int(input("Enter a positive integer: "))
numbers = np.random.randint(0, 11, size*size)
numbers.resize(size, size)
print(numbers)
print("Minor diagonal sum =", minor_diagonal(numbers))
```

this output might be produced:

```
Enter a positive integer: 3
[[ 0  3  6]
 [ 7  5  6]
 [10  8  5]]
Minor diagonal sum = 21
```

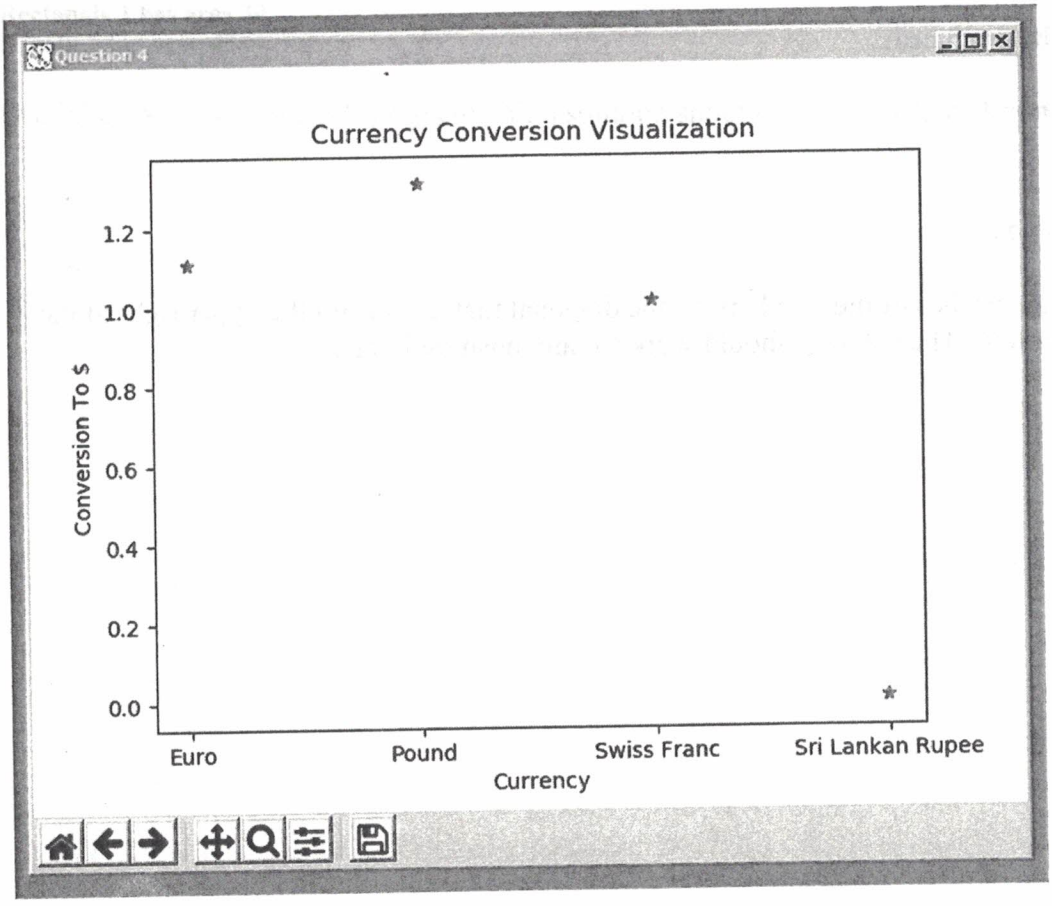
The minor diagonal consists of the numbers on the diagonal that goes from the upper right of the matrix to the lower left. The solution should work for any positive integer.

Question Four. 25 points. Complete the code using only the provided library

import matplotlib.pyplot as plt

currencies = ["Euro", "Pound", "Swiss Franc", "Sri Lankan Rupee"]
conversions = [1.11, 1.31, 1.01, .0055]

to produce this exact scatter graph:



The four stars alternate between "green" and "red" with the leftmost star being "green".