Caitlin Sisilli

Homework 2:

Question 1)

```
class Country:
    def __init__(self,cName="",cPopulation=0,sqMile=0,cDensity=0):
        self.cName=cName
        self.cPopulation=cPopulation
        self.sqMile=sqMile
        self.cDensity=cDensity
    def Destiny(self):
        return self.cPopulation/self.sqMile
    def Record(self, cName,cPopulation,sqMile):
        self.cName=cName
        self.cPopulation=cPopulation
        self.sqMile=sqMile
        self.cDensity=self.Destiny()
    def prints(self):
        print("Country Name: ",self.cName)
```

```
        print("Population Number: ",self.cPopulation)
        print("Miles: ",self.sqMile)
        print("Density: ",self.cDensity)
call=Country()
call.Record("Canada", 1000,10)
call.prints()
```

Output:

Country Name: Canada

Population Number: 1000

Miles: 10

Density: 100.0

Question 2)

```
class Rectangle():
    def __init__(self,length,width):
        self.length =int(length)
        self.width= int(width)
    def rectangle_area(self):
```

```
        return self.width*self.length
    def display(self):
        print("Length: ", self.length)
        print("Width: ",self.width)
        print("Area: ",self.rectangle_area())
newRectangle = Rectangle(12, 10)
newRectangle.display()
```

Output:

Length: 12

Width: 10

Area: 120

Question 3)

```
import numpy as np
A = np.arange(10)
A
print("The array is: ", A)
print("The array reverse is: ", A[::-1])
print("The array's last element: ", A[-1])
```

Output:

The array is: [0 1 2 3 4 5 6 7 8 9]

The array reverse is: [9 8 7 6 5 4 3 2 1 0]

The array's last element: 9

Part c)

```
import numpy as np

A = np.arange(10)

A

def split(A):

    evenList=[]

    for i in A:

        if(i%2==0):

            evenList.append(i)

    print("Even numbers from list: ",evenList)

print(split(A))
```

Output:

Even numbers from list: [0, 2, 4, 6, 8]

Question 4)

```
import numpy as np

B = np.arange(0, 12).reshape(3, 4)

B

print(B)

print("The first and second columuns: \n", B[:,[0,1]])

print("The first and second rows: \n",B[:,0:1])

print("Extracting the specifc 6,7,10,11: \n", B[1:,2:])
```

Output:

```
[[ 0  1  2  3]

 [ 4  5  6  7]

 [ 8  9 10 11]]

The first and second columuns:

 [[0 1]

 [4 5]

 [8 9]]

The first and second rows:

 [[0]
```

[4]

[8]]

Extracting the specifc 6,7,10,11:

[[6 7]

[10 11]]

Question 5)

Part A)

A is:

[[[0 1]]

[[2 3]]

[[4 5]]

[[6 7]]]

B is:

[[[0]
 [1]]

[[2]
 [3]]

[[4]

[5]]

[[6]
[7]]]

Part B)

[[[0 1]
[1 2]]

[[4 5]
[5 6]]

[[8 9]
[9 10]]

[[12 13]
[13 14]]]

Part C)

[[[0 1]
[-1 0]]

[[0 1]
[-1 0]]

[[0 1]
[-1 0]]

[[0 1]
[-1 0]]]

Part D)

```
[[[ 0  0]
  [ 0  1]]

 [[ 4  6]
  [ 6  9]]

 [[16 20]
  [20 25]]

 [[36 42]
  [42 49]]]
```