

BIO 480/680 Computer programming exercise II

The following sets of program statements contain one or more errors that prevent the program from running. Assume that any needed import statements are present earlier in the program. Find the errors and show how they may be fixed.

a)

```
for i in rang( 10 ):
    print( i is {i}" )
```

b)

```
x = np.zeros(101);
for i in range( 100 ):
    x[i+1] = x[I] + 2
```

c)

```
x = np.zeros(10)
x[1.5] = 0
```

For the following sets of program statements, the program will run but does not produce the desired or expected result. Find and fix the errors.

a)

```
# Print out every value in the array N
N = np.zeros(10)
for i in range(100):
    print( f"For row {i}, N is {N[i]}" )
```

b)

```
#Create 10 random numbers between 0 and 1 and save them in the array x
import numpy as np
import random

x = np.zeros(10)
for i in range(10):
    x[i] = random()
```

c)

```
# Add 3 to the value of N and then multiply the sum by i
N = N + 3 * i;
```

Suppose that you had entered this program for your exponential growth model:

```
"""
Exponential growth model using arrays
"""
import numpy as np
steps = 10
t = np.zeros(steps+1)
N = np.zeros(steps+1)
```

```
r = 0.5
t[0] = 0
N[0] = 2
for i in range( steps ):
    N[i+1] = N[i] + r * N[i]
    t[i+1] = t[i] + 1

for i in range( steps ):
    print( f"At time {t[i]}, N is {N[0]:6.4f}" )
```

You run the program, but the displayed results give a value of 2.0 for the population size at all times.

Also the results only show time and population values for 9 months instead of 10 months that are needed

What is wrong with the program?