

Lab 8 What is the output (10 points)



Name (first and last)	NetID

Consider this to be practice for the second exam. The problems are the type of problems that may appear on the exam.

Problem 1: Un-mangle the following code:

```
else :
if num %2 == 0 :
num = 0;
num = int(input("Enter a positive integer to start the sequence: "))
num = num // 2
num = num * 3 + 1
print (num, end=', ')
print (num, end=', ')
print('Your sequence is:')
while num <= 0 :
while num != 1 :
```

The original program prompted the user for a positive integer and then continued to calculate a sequence of numbers according to the following rules:

- if the number is even, divide it by 2
- if the number is odd, multiply it by 3 and add 1 and so on, until the value ends up being equal to 1.

Problem 2:

The following program generates a random integer between 1 and 10. The user is asked to guess the number.

```
import random
secret = random.randint(1,10)
num = int(input("Try to guess my number. It is between 1 and 10. "))
if num == secret:
    print ("Great job! You get a prize of $10.00")
elif num - secret == 1 or secret - num == 1 :
    print ("Not really, but you were close. You get a prize of $2.00")
else:
    print ("Sorry, you did not win anything this time. ")
```

- What is the probability that the user gets the prize of \$10.00?
- What is the probability that the user gets the prize of \$2.00?

Problem 3:

Consider a four sided fair die (a small pyramid) with values 1,2,3 and 4 on the four faces.

- List all possible sums of values that can be obtained by rolling two such dice and adding the values on faces that lie flat on the table. List all the ways in which those outcomes can be received (for example, 3 can be obtained by 1 on the first die and 2 on the other one, or vice versa, so there are two ways to get a sum of 3).
- For each outcome above, state what is the probability of getting that value when two dice are rolled once.
- If a player rolled the dice 30 times and got a sum of either 2, 3 or 5 every single time so far, what is the probability of getting the sum of 4 on the next roll?

Problem 4: Trace the output of the following programs. Make sure you are working on paper, **not** on the computer.

```
prices = [0, 10, 20]
for item_price in prices:
    item_price = item_price + 10
print (prices)
```

```
numbers = [6, 89, 76, 3, 13, 42, 84, 56, 39, 90, 42]
num = input("Enter a number from 0 to 100: ")
if num in numbers:
    print("Your lucky number is at position", numbers.index(num))
else:
    print("This is not a lucky number.")
```

Assume user enters 13 at the prompt.

```
numbers = [6, 89, 76, 3, 13, 42, 84, 56, 39, 90, 42]
num = input("Enter a number from 0 to 100: ")
if num in numbers:
    print("Your lucky number is at position", numbers.index(num))
else:
    print("This is not a lucky number.")
```

Assume user enters 55 at the prompt.

```
list = ["apple", "pear", "plum", "banana", "grape"]
for pos in range(len(list)) :
    print (pos, ":", list[pos])
```

```
list = ["apple", "pear", "plum", "banana", "grape"]
list2 = []
for pos in range(len(list)) :
    list2.append(list[ len(list) - i - 1 ])
print(list)
print(list2)
```