In [1]:
```
# Tejas Acharya
# EE-541
# Homework 01
# Problem 02
```

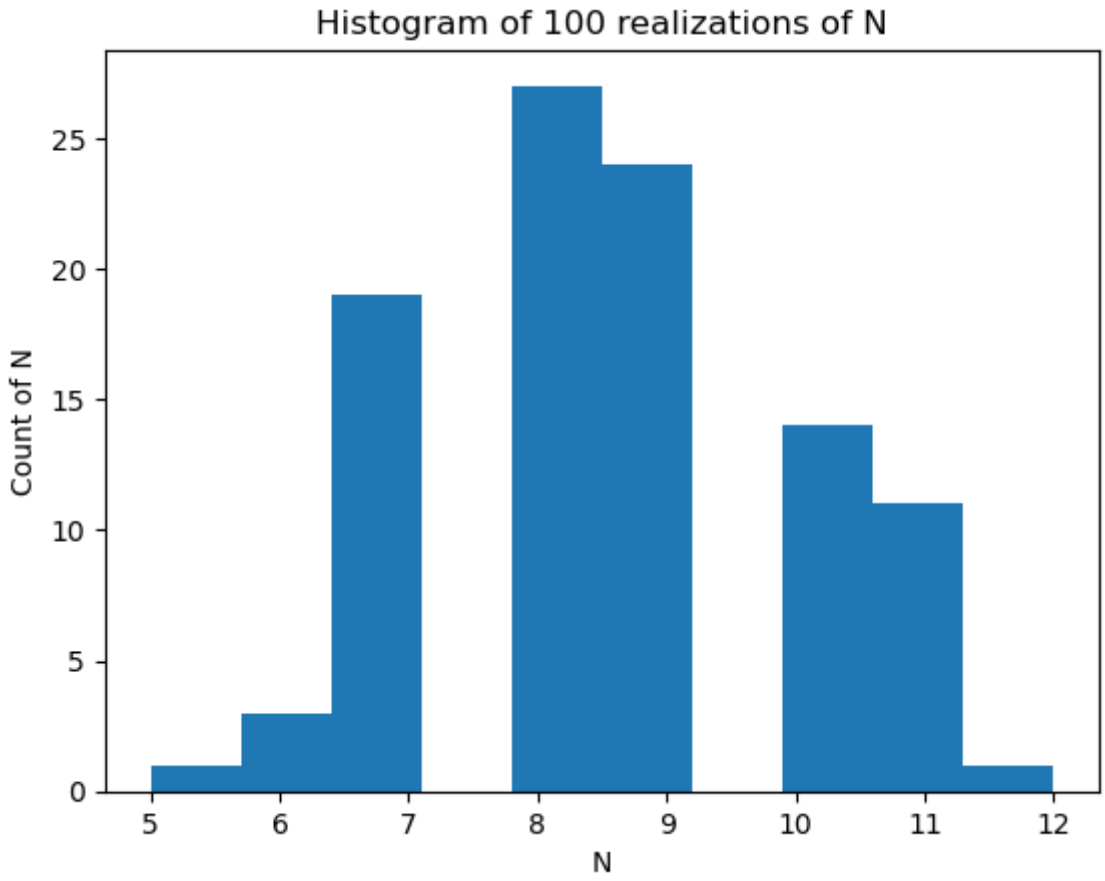
In [2]:
```
#Importing Libraries
import random
import matplotlib.pyplot as plt
```

In [3]:
```
#Constants
MIN = 0
MAX = 1
SUM = 4
```

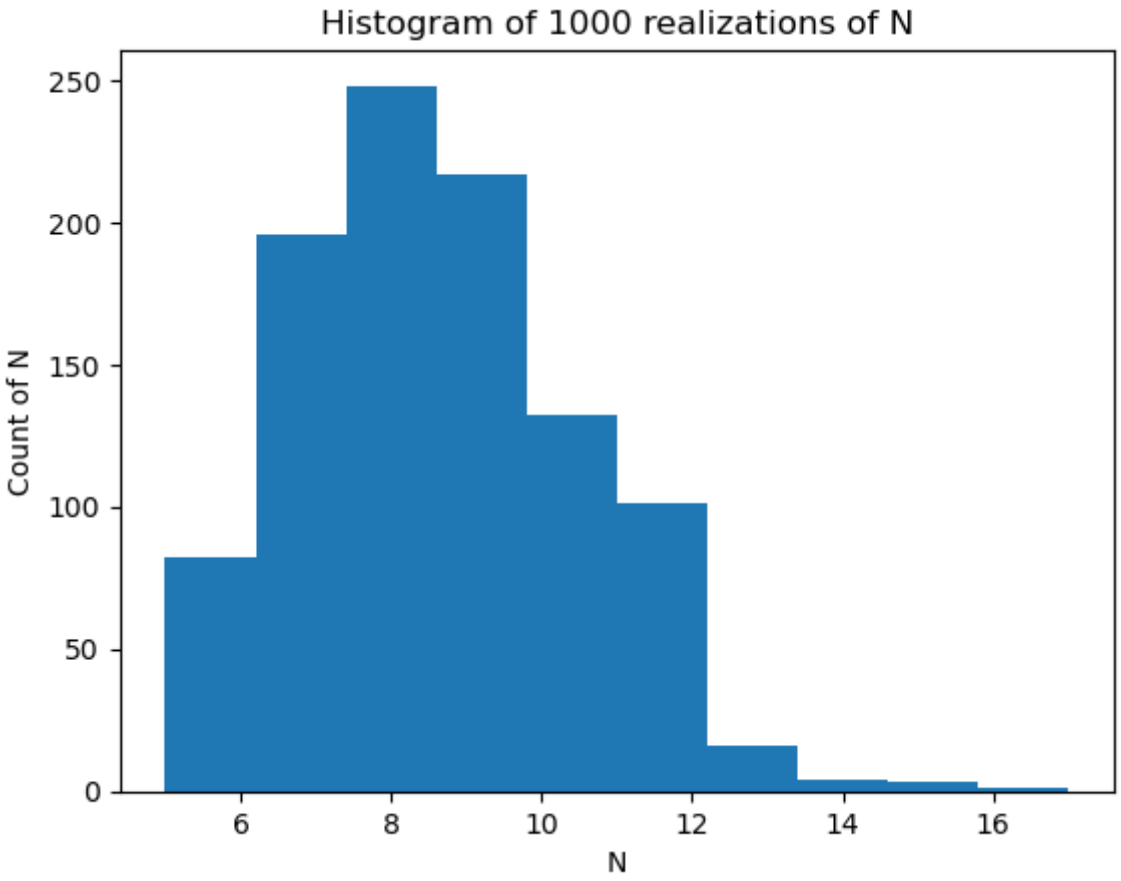
In [4]:
```
def generate_random_variable():
    count = 0
    total = 0

    while (total <= SUM):
        total += random.uniform(MIN, MAX)
        count += 1

    return count
```

In [5]:
```
realizations_100 = [generate_random_variable() for i in range(100)]
realizations_1000 = [generate_random_variable() for i in range(1000)]
realizations_10000 = [generate_random_variable() for i in range(10000)]
```

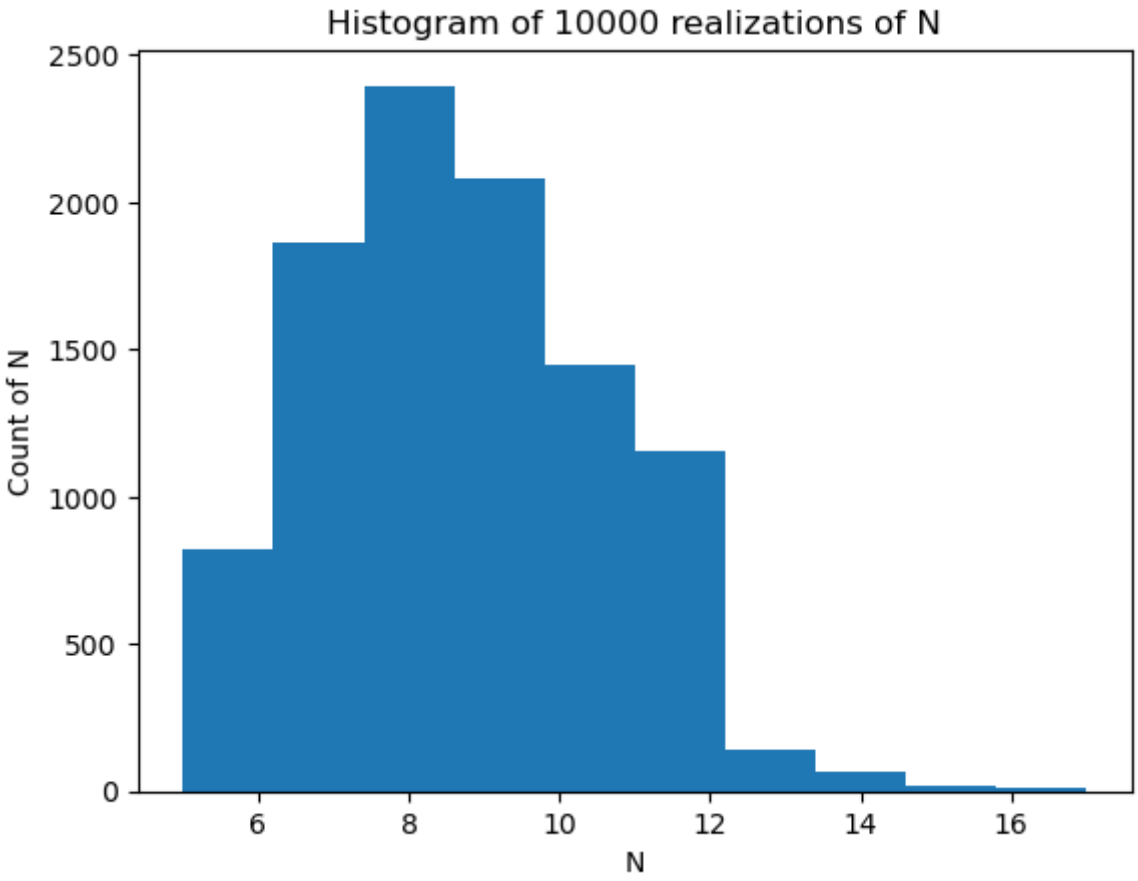
In [6]:
```
plt.figure()
plt.hist(realizations_100)

plt.xlabel('N')
plt.ylabel('Count of N')
plt.title('Histogram of 100 realizations of N')

plt.show()
```



In [7]:
```
plt.figure()
plt.hist(realizations_1000)

plt.xlabel('N')
plt.ylabel('Count of N')
plt.title('Histogram of 1000 realizations of N')

plt.show()
```



In [8]:
```
plt.figure()
plt.hist(realizations_10000)

plt.xlabel('N')
plt.ylabel('Count of N')
plt.title('Histogram of 10000 realizations of N')

plt.show()
```



In [9]:
```
print('By observing the larger realizations of N, we can safely say that th
```

```
By observing the larger realizations of N, we can safely say that the appro
ximate value of E[N] is 8.
```