

- NAME:RAIYAN RIYAZ CHANDLE
- ROLL NO:B15
- PRN:2324000573
- EXPERIMENT NO:2
- TITLE:BINOMIAL DISTRIBUTION

```
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
import scipy as sp
```

```
def Binomial_Distribution(n,p,x):
    probability = (sp.special.factorial(n) / (sp.special.factorial(n - x)*sp.special.factorial(x))) * (p**x) * ((1 - p)**(n - x))
    return probability
```

```
n=int(input("enter value for number of trails"))
x=int(input("enter value for number of successes"))
p=float(input("enter value for probability"))
prob=Binomial_Distribution(n,p,x)
print(f"probability is {prob}")
```

```
↗ enter value for number of trails5
enter value for number of successes2
enter value for probability0.5
probability is 0.3125
```

```
random_sample_space = np.random.binomial(n=10, p=0.5, size=10)
random_sample_space
```

```
↗ array([7, 3, 3, 2, 5, 4, 5, 5, 7, 3])
```

```
data_1=np.random.binomial( n=5,p=0.5,size=200)
data_1
```

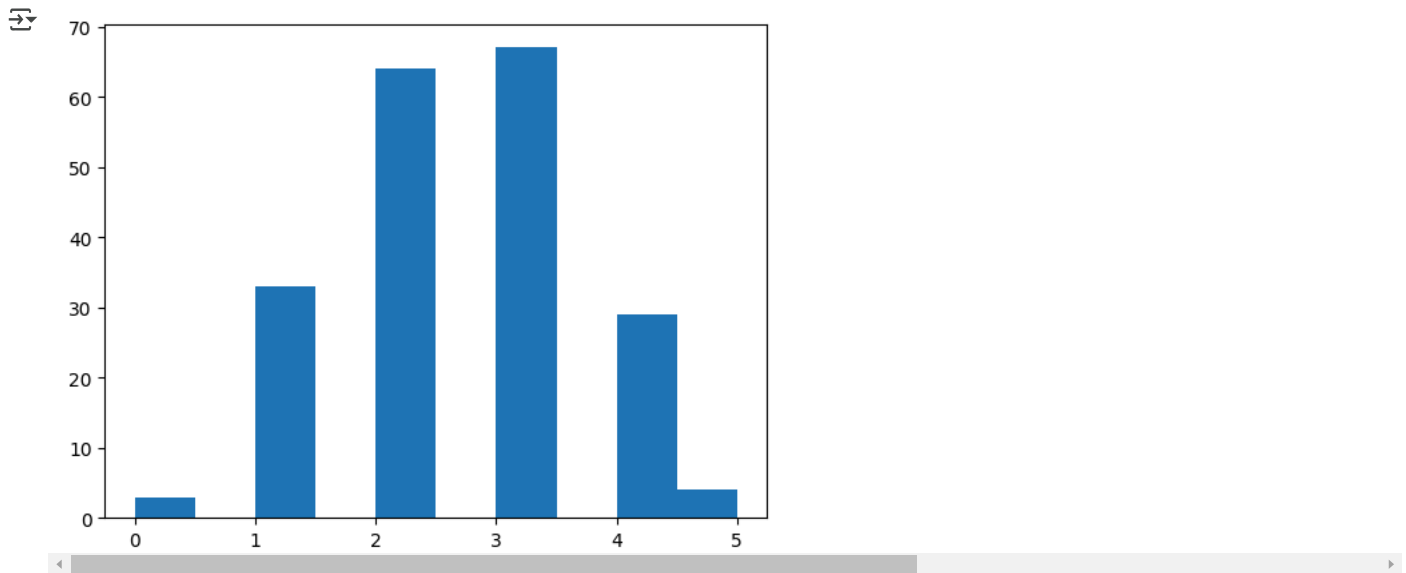
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1, 3]])
```

```
#step 3
mean=np.mean(data_1)
variance=np.var(data_1)
st_dev=np.std(data_1)

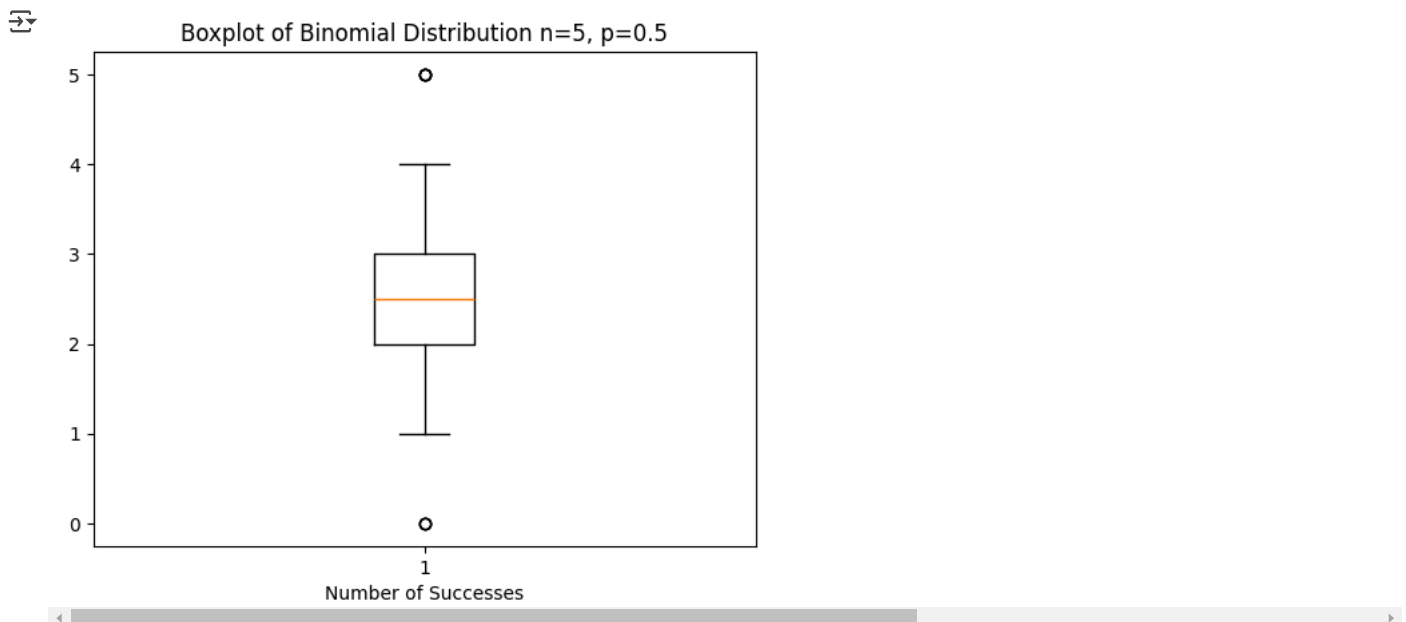
print(f"mean {mean}")
print(f"variance {variance}")
print(f"standard deviation {st_dev}")

↗ mean 2.49
variance 1.0799
standard deviation 1.0391823709051267
```

```
plt.hist(data_1,bins=10)
plt.show()
```



```
plt.boxplot(data_1)
plt.title('Boxplot of Binomial Distribution n=5, p=0.5')
plt.xlabel('Number of Successes')
plt.show()
```



```
data_n10 = np.random.binomial(n=10, p=0.5, size=1000)
data_n20 = np.random.binomial(n=20, p=0.5, size=1000)
data_n50 = np.random.binomial(n=50, p=0.5, size=1000)
data_n10
```

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data\_n20

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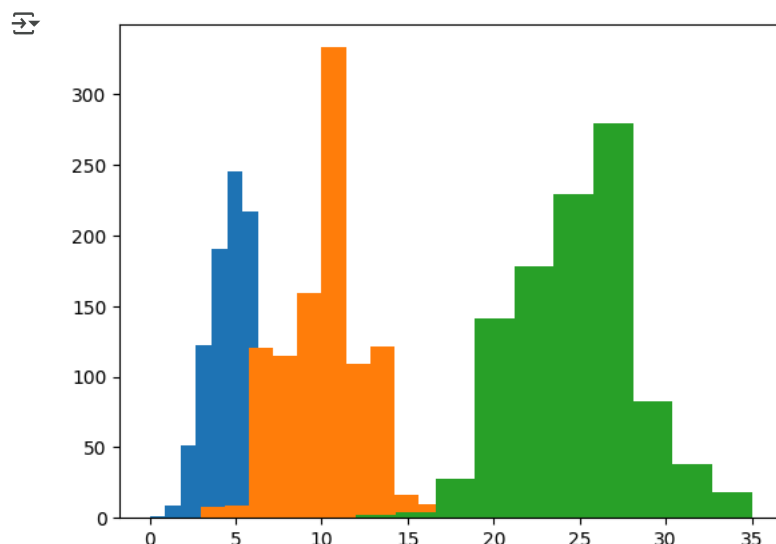
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data\_n50

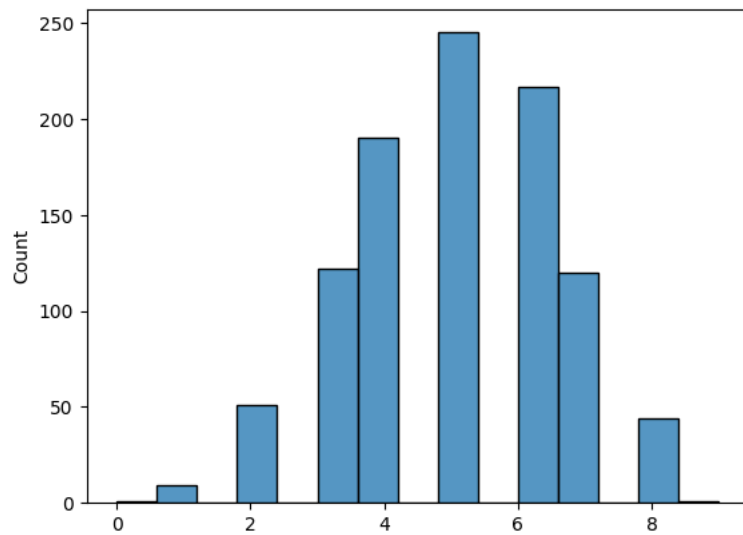
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```
plt.hist(data_n10, bins=10)
plt.hist(data_n20, bins=10)
plt.hist(data_n50, bins=10)
plt.show()
```




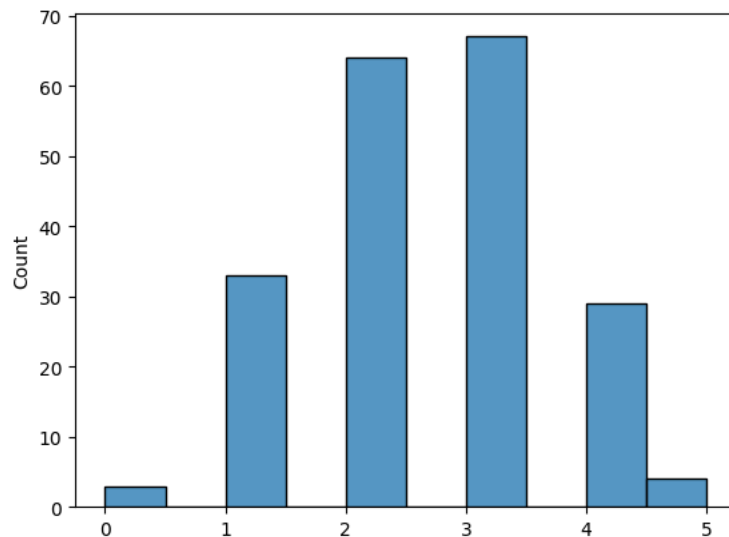
```
sns.histplot(data_n10,bins=15)
```

 <Axes: ylabel='Count'>



```
sns.histplot(data_1,bins=10)
```

 <Axes: ylabel='Count'>



Start coding or [generate](#) with AI.