Distribution Submission - FoDS

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```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

Binomial Distribution

```
var = sum(np.random.binomial(12,0.2,20000)==4)/20000
var
```

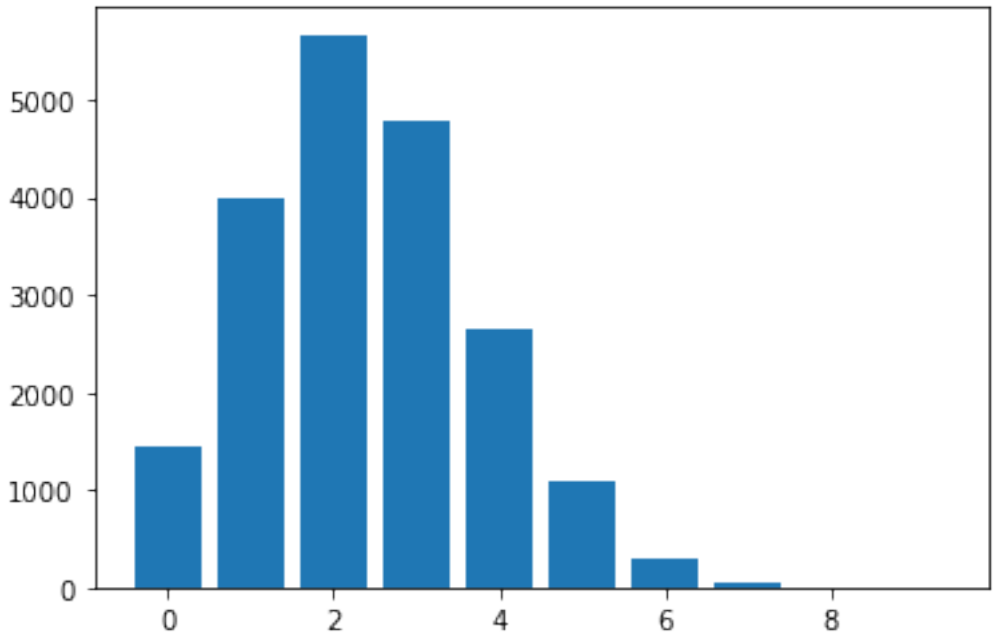
```
0.13275
```

```
var = sum(np.random.binomial(9,0.2,20000)==4)/20000
var
```

```
0.0643
```

```
a = pd.Series(np.random.binomial(12,0.2,20000)).value_counts().index
b = pd.Series(np.random.binomial(12,0.2,20000)).value_counts().values
plt.bar(a,b)
# plt.show()
```

```
<BarContainer object of 10 artists>
```



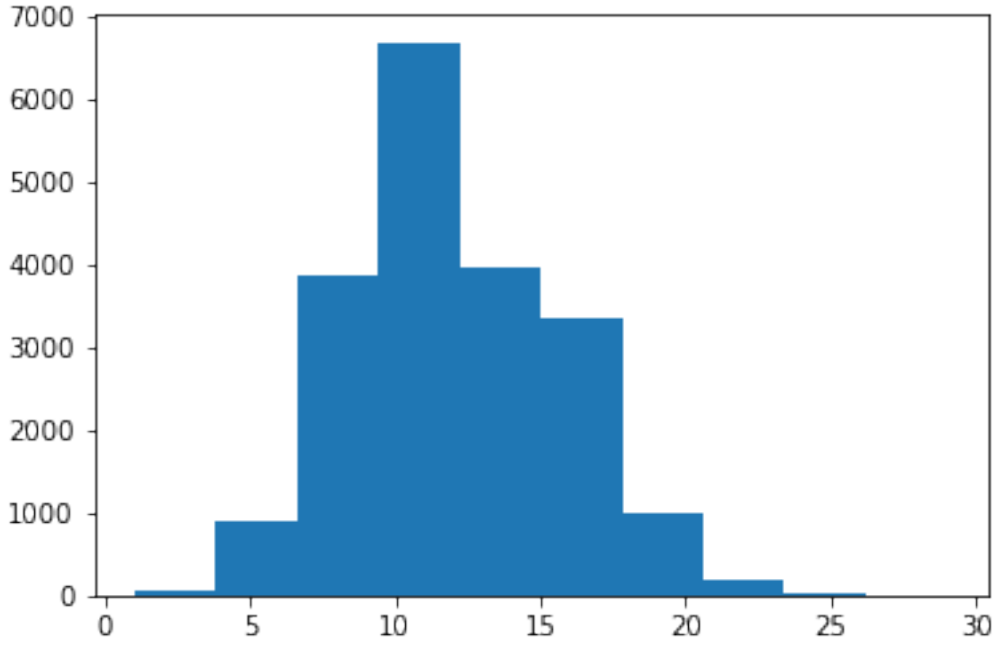
Poisson Distribution

```
np.random.poisson(12,10000)
```

```
array([ 9, 15,  6, ..., 14, 12, 10])
```

```
plt.hist(np.random.poisson(12,20000))
```

```
(array([4.500e+01, 8.910e+02, 3.860e+03, 6.686e+03, 3.954e+03,
3.366e+03,
        9.990e+02, 1.790e+02, 1.600e+01, 4.000e+00]),
 array([ 1. ,  3.8,  6.6,  9.4, 12.2, 15. , 17.8, 20.6, 23.4, 26.2,
29. ]),
 <BarContainer object of 10 artists>)
```



Uniform Distribution

```
np.random.uniform(0,20,10000)
```

```
array([16.58095866,  9.69872068, 19.40050259, ..., 14.65958345,
       15.1456956 , 10.99368038])
```

```
x = np.random.uniform(0,20,10000)
y = sum(x>10)/10000
z = sum(x<10)/10000
print(y,z)
```

```
0.4988 0.5012
```

```
sum(np.random.uniform(0,20,10000)>5)/10000-
(sum(np.random.uniform(0,20,10000)<10/10000))
```

```
0.7468
```

Normal Distribution

```
mean = 15
sd = 7
a = np.random.normal(mean,sd,10000)
a
```

```
array([22.52738496,  5.45042944,  7.00754071, ...,  8.83465569,
       14.26210656, 15.42110835])
```

```
b = np.exp((-(((a-mean)/sd)**2)/2)/sd*(2*np.pi)**0.5)
b
```

```
array([0.8129872 , 0.71661118, 0.79182578, ..., 0.87032111,
0.99801244,
       0.99935224])
```

```
plt.bar(a,b)
```

```
<BarContainer object of 10000 artists>
```