 # Problem Statement: Consider a random vector, a collection of random values of n-dimension [min ‘n’ = 100]. Fit Poisson's distribution and Gaussian distribution for these collected values.

```
#fitting poission & gaussion distribution

import numpy as np
import scipy.stats as stats
import matplotlib.pyplot as plt



np.random.seed(42)
n=150 #n>=100, size of vector
random=np.random.randint(1,100,n) #vector

#poission dist calc
lambda_poission=np.mean(random)

#gaussion dist calc
mu,std=np.mean(random),np.std(random)



#points for plotting fitted poission & gussion dist
x=np.arange(0,150) #0-149 total 150 vals as random vector's len=n, atleast n points should be there

#poission pmf calc
poission_pmf=stats.poisson.pmf(x,lambda_poission)

#gaussian pdf
gaussian_pdf=stats.norm.pdf(x,mu,std)
```

```
#plottig
plt.figure(figsize=(12,8))
plt.hist(random,bins=20,alpha=.6,color='g',density=True,label="data")
plt.plot(x,poission_pmf,'bo',ms=9,label=f'poission fit(λ={lambda_poission:.2f})')
plt.plot(x,gaussian_pdf,'r-',lw=3,label=f'gaussion fit(μ={mu:.2f},σ={std:.2f})')
plt.title("plotiing the fitted val of poission & gaussion dist on ra random vector")
plt.xlabel("values")
plt.ylabel("probabiloity density/distribution")
plt.legend(loc='best')
plt.show()
```