MA201_ASSIGNMENT 2

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Task: Write code for plotting PMF, PDF, and CDF without any library function. For example, consider the tossing coin experiment and the number of heads as a random variable XX.

Sample code without logic is attached in PDF.

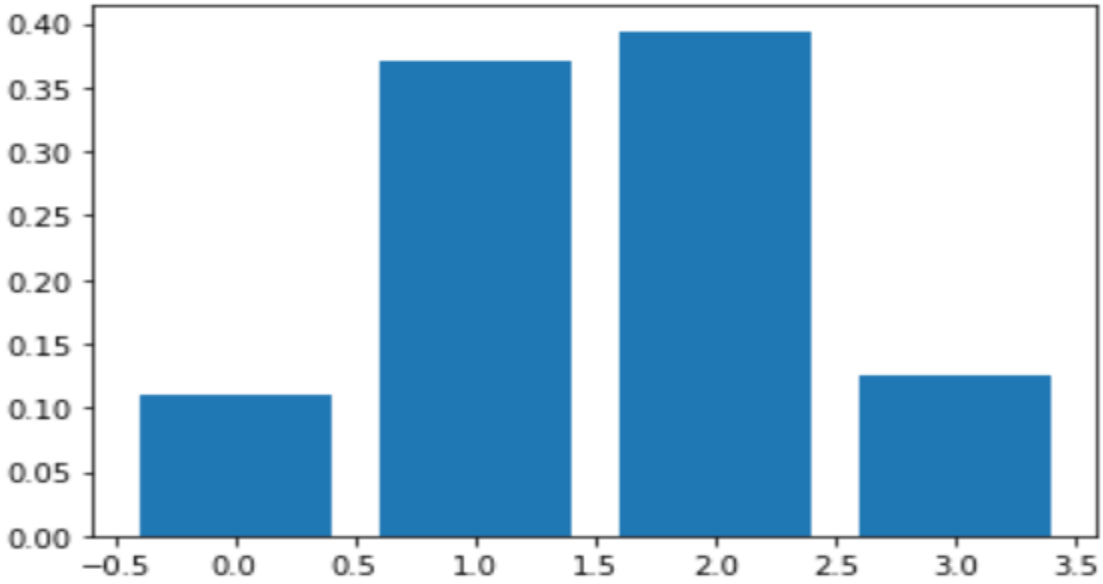
Try to make the code as expected in PDF.

Submit Assignment in ONE PDF.

Solution Code:

```
import scipy.stats as sys
import numpy as np
import random as rd
import matplotlib.pyplot as plt

TOSSING OF 3 COINS
prb={}
L=[]
n=3
for i in range(1000):
    L.append((rd.randint(0,1),rd.randint(0,1),rd.randint(0,1)))

sum=0
for x in L:
    sum=0
    for i in x:
        sum+=i
    if(sum in prb.keys()):
        prb[sum]+=1
    else:
        prb[sum]=1

for x in prb.keys():
    prb[x]/=1000

plt.bar(prb.keys(),prb.values())
plt.show()
```

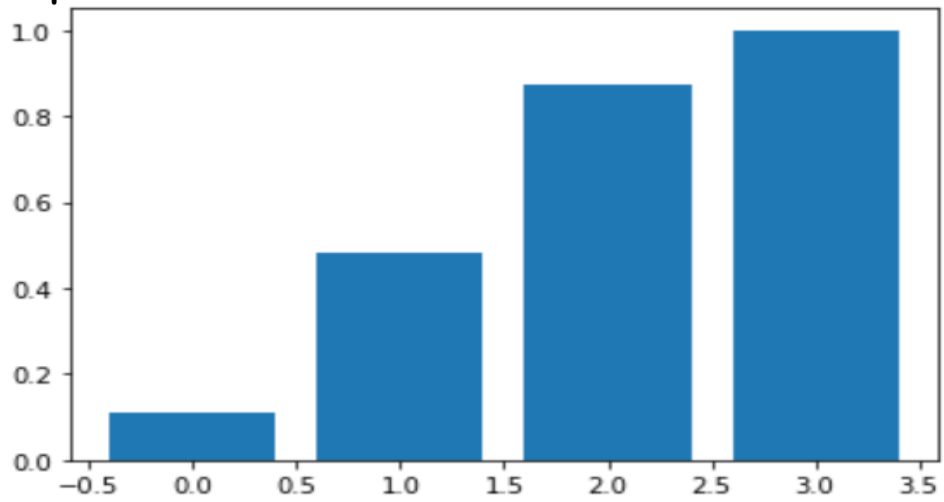
Output:



CDF (3Coin toss)

```
def plotCDF(prb):
    CDF=[]
    sum=0
    for i in sorted(prb.keys()):
        sum+=prb[i]
        CDF.append(sum)

    plt.bar(sorted(prb.keys()),CDF)
    plt.show()
plotCDF(prb)
```

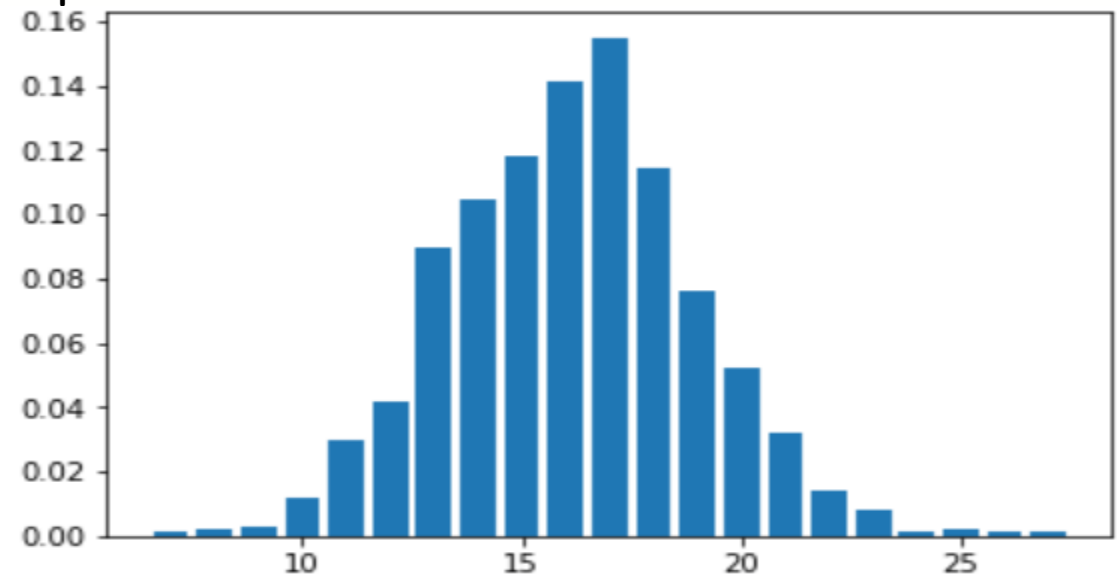
Output:



PMF(32coins)

```
prb={}
L=[]

n=3
for i in range(1000):
    tup=()
    for j in range(32):
        tup+=(rd.randint(0,1),)
    L.append(tup)

sum=0
for x in L:
    sum=0
    for i in x:
        sum+=i
    if(sum in prb.keys()):
        prb[sum]+=1
    else:
        prb[sum]=1

for x in prb.keys():
    prb[x]/=1000

plt.bar(prb.keys(),prb.values())
plt.show()
```

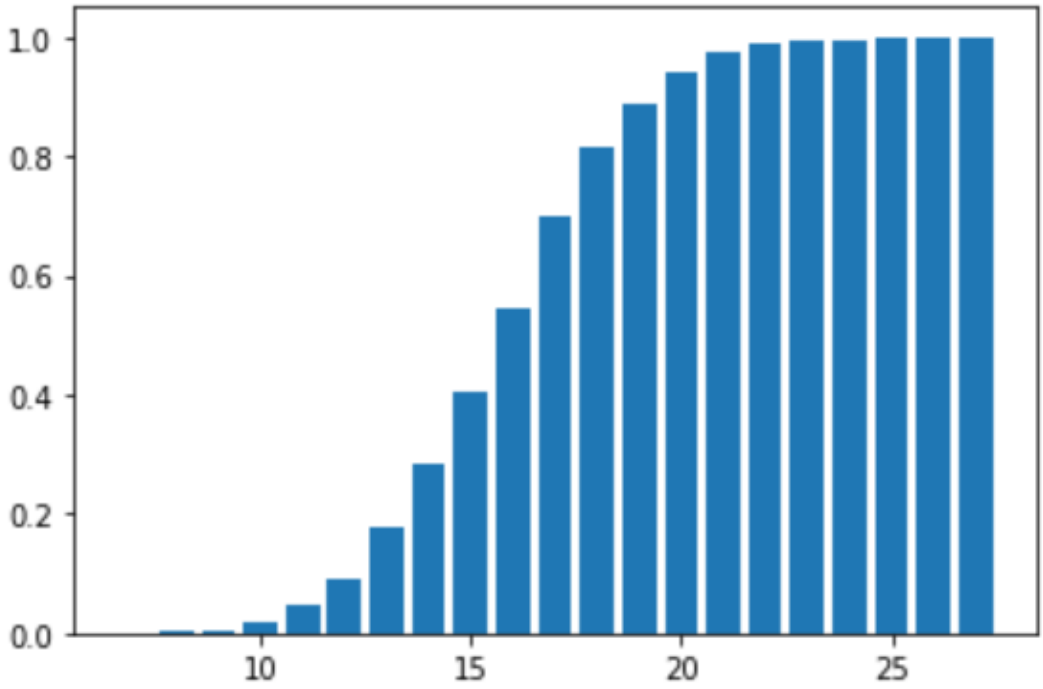
Output:



CDF Plot

```
plotCDF(prb)
```

Output:



Link of my original file in google colab for reference

https://colab.research.google.com/drive/1J-AYczwrb1dg-yjDpWOvWlkA47f0kAfC?usp=sharing