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SKILL: 6

In []:



```
import math
import numpy as np
import pandas as pd
from matplotlib import pyplot
from scipy import stats
```

In []:



```
matches = pd.read_csv('matches.csv')
deliveries = pd.read_csv('deliveries.csv')
```

In []:



```
win_by_runs_data = matches[matches.win_by_runs>0].win_by_runs
win_by_runs_mean,win_by_runs_std=win_by_runs_data.mean(),win_by_runs_data.std()
z_score_35 = (35-win_by_runs_mean)/win_by_runs_std
print(f"z-score of 35 is {z_score_35:.2f}")
```

z-score of 35 is 0.17

In []:



```
z_score=stats.norm.cdf(0.19)
print(f'z-score of 0.19= {z_score * 100:.2f} percentile')
```

z-score of 0.19= 57.53 percentile

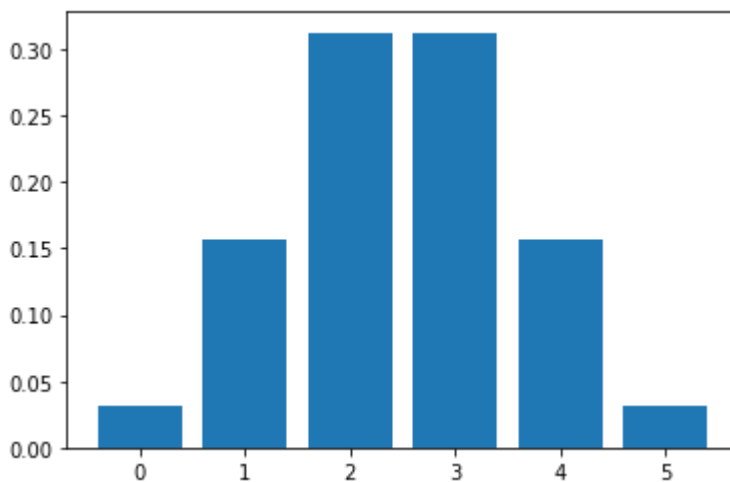
In []:



```
def compute_binomial_probability(x,n,p):
    """
    Returns Probability of getting 'x' success outcomes in 'n' trials.
    probability of getting success being 'p'
    """
    outcomes = math.factorial(n) / (math.factorial(x) * math.factorial(n-x))
    probability_of_each_outcome = (p ** x) * ((1-p) ** (n-x))
    return outcomes * probability_of_each_outcome

def plot_binomial_distribution_graph(n,p):
    """
    plots binomial distribution graph of an event with 'n' trials,
    probability of getting success of the event being 'p' for values '0' to 'n'
    """
    probablities = list(map(lambda x:compute_binomial_probability(x,n,p),range(0,n+1)))
    pyplot.bar(list(range(0,n+1)),probablities)

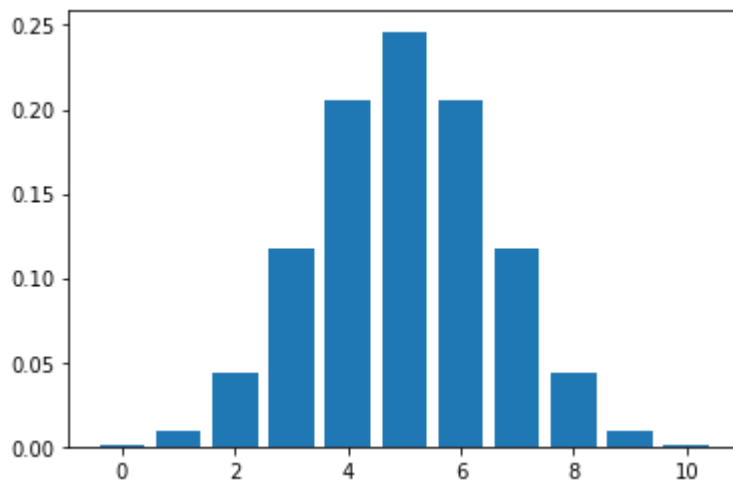
plot_binomial_distribution_graph(5,0.5)
```



In []:



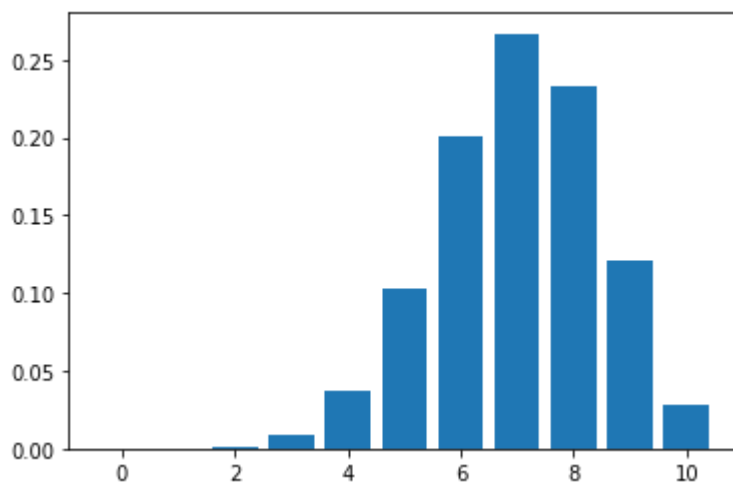
```
plot_binomial_distribution_graph(10,0.5)
```



In []:



```
plot_binomial_distribution_graph(10,0.7)
```



In []:



```
pyplot.bar(["0", "1"], [0.35, 0.65])
```

Out[15]:

<BarContainer object of 2 artists>

