Binomial Distribution

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Binomial Distribution

Binomial Distribution is a *Discrete Distribution*.

It describes the outcome of binary scenarios, e.g. toss of a coin, it will either be head or tails.

It has three parameters:

`n` - number of trials.

`p` - probability of occurence of each trial (e.g. for toss of a coin 0.5 each).

`size` - The shape of the returned array.

Discrete Distribution: The distribution is defined at separate set of events, e.g. a coin toss's result is discrete as it can be only head or tails whereas height of people is continuous as it can be 170, 170.1, 170.11 and so on.

Example

Given 10 trials for coin toss generate 10 data points:

```
from numpy import random

x = random.binomial(n=10, p=0.5, size=10)

print(x)
```

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Visualization of Binomial Distribution

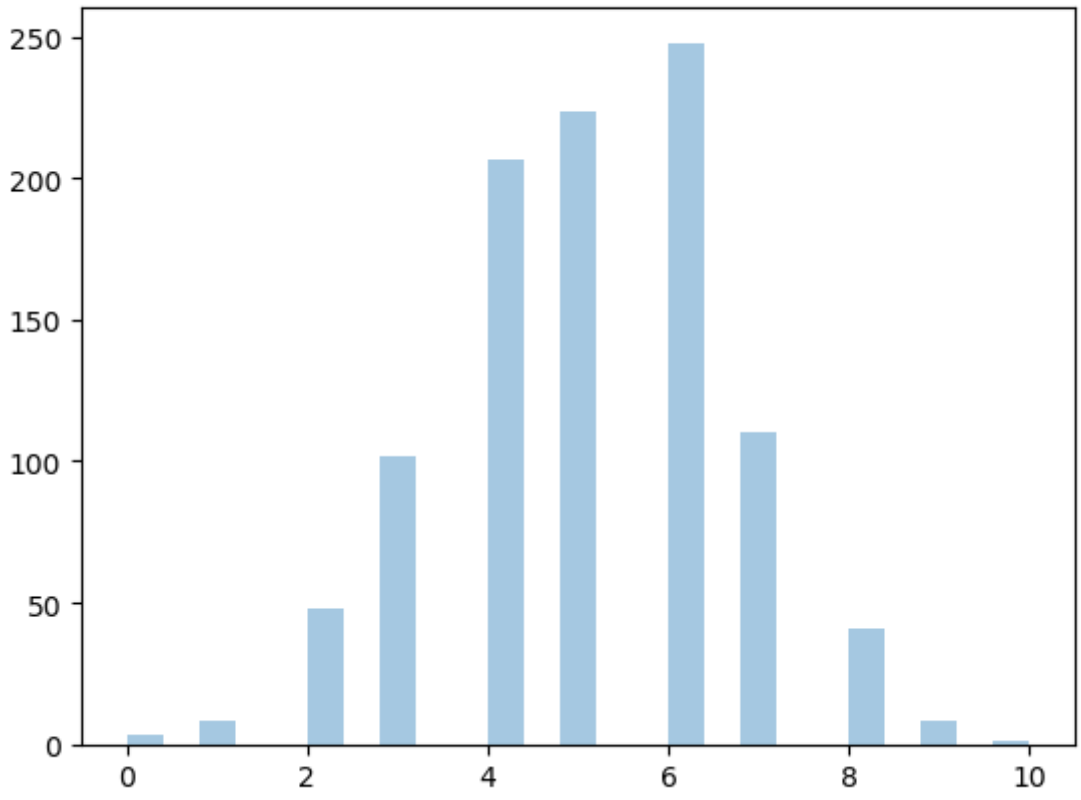
Example

```
from numpy import random
import matplotlib.pyplot as plt
import seaborn as sns

sns.distplot(random.binomial(n=10, p=0.5, size=1000), hist=True, kde=False)

plt.show()
```

Result



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Difference Between Normal and Binomial Distribution

The main difference is that normal distribution is continous whereas binomial is discrete, but if there are enough data points it will be quite similar to normal distribution with certain loc and scale.

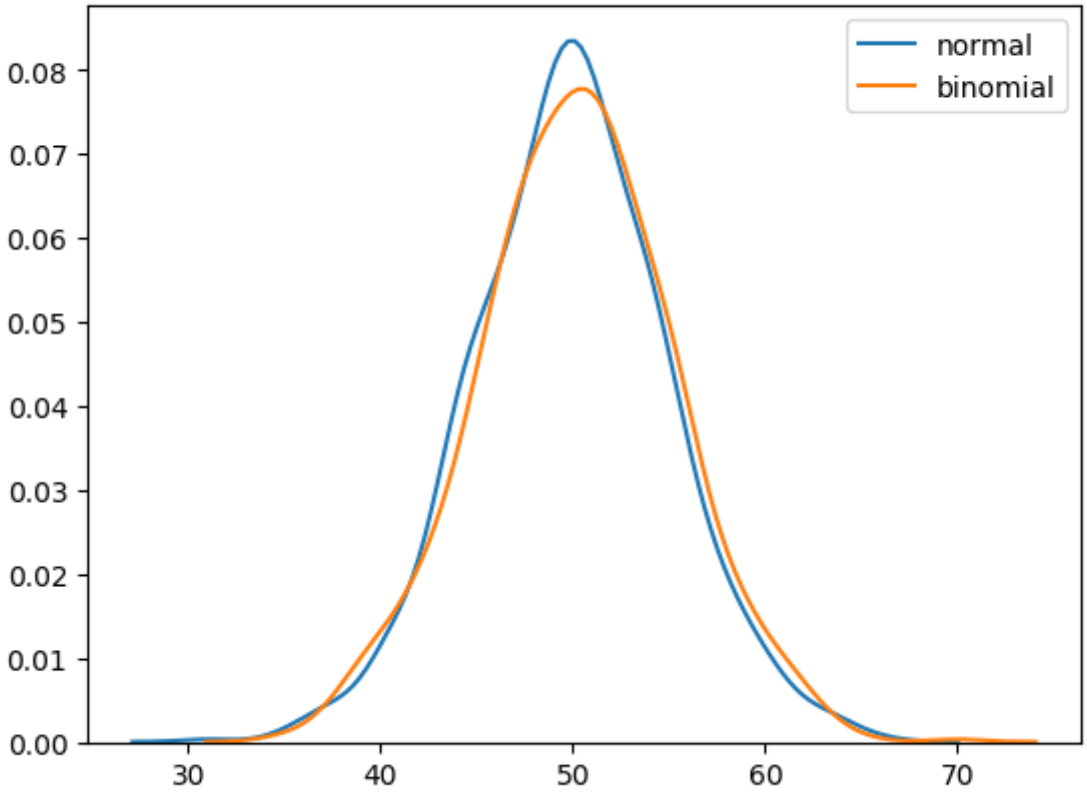
Example

```
from numpy import random
import matplotlib.pyplot as plt
import seaborn as sns

sns.distplot(random.normal(loc=50, scale=5, size=1000), hist=False,
label='normal')
sns.distplot(random.binomial(n=100, p=0.5, size=1000), hist=False,
label='binomial')

plt.show()
```

Result



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