Multinomial Distribution

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Multinomial Distribution

Multinomial distribution is a generalization of binomial distribution.

It describes outcomes of multi-nomial scenarios unlike binomial where scenarios must be only one of two. e.g. Blood type of a population, dice roll outcome.

It has three parameters:

`n` - number of times to run the experiment.

`pvals` - list of probabilties of outcomes (e.g. [1/6, 1/6, 1/6, 1/6, 1/6, 1/6] for dice roll).

`size` - The shape of the returned array.

Example

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Draw out a sample for dice roll:

```
from numpy import random

x = random.multinomial(n=6, pvals=[1/6, 1/6, 1/6, 1/6, 1/6, 1/6])

print(x)
```

Note: Multinomial samples will NOT produce a single value! They will produce one value for each `pval` .

Note: As they are generalization of binomial distribution their visual representation and similarity of normal distribution is same as that of multiple binomial distributions.

Exercise ?

The `random.multinomial()` method has three parameters, which ones?

- ○ `loc scale size`
- ○ `n pvals size`
- ○ `loc dev size`

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