Random Numbers in NumPy

‹ Previous Next ›

What is a Random Number?

Random number does NOT mean a different number every time. Random means something that can not be predicted logically.

Pseudo Random and True Random.

Computers work on programs, and programs are definitive set of instructions. So it means there must be some algorithm to generate a random number as well.

If there is a program to generate random number it can be predicted, thus it is not truly random.

Random numbers generated through a generation algorithm are called *pseudo random*.

Can we make truly random numbers?

Yes. In order to generate a truly random number on our computers we need to get the random data from some outside source. This outside source is generally our keystrokes, mouse movements, data on network etc.

We do not need truly random numbers, unless its related to security (e.g. encryption keys) or the basis of application is the randomness (e.g. Digital roulette wheels).

In this tutorial we will be using pseudo random numbers.

Generate Random Number

NumPy offers the `random` module to work with random numbers.

Generate a random integer from 0 to 100:

```
from numpy import random

x = random.randint(100)

print(x)
```

Try it Yourself »

Generate Random Float

The random module's `rand()` method returns a random float between 0 and 1.

Example

Generate a random float from 0 to 1:

```
from numpy import random

x = random.rand()

print(x)
```

Try it Yourself »

Generate Random Array

In NumPy we work with arrays, and you can use the two methods from the above examples to make random arrays.

Integers

Example

Generate a 1-D array containing 5 random integers from 0 to 100:

```
from numpy import random

x=random.randint(100, size=(5))

print(x)
```

Try it Yourself »

Example

Generate a 2-D array with 3 rows, each row containing 5 random integers from 0 to 100:

```
from numpy import random

x = random.randint(100, size=(3, 5))

print(x)
```

Try it Yourself »

Floats

The `rand()` method also allows you to specify the shape of the array.

Example

Generate a 1-D array containing 5 random floats:

```
from numpy import random

x = random.rand(5)
```

Try it Yourself »

Example

Generate a 2-D array with 3 rows, each row containing 5 random numbers:

```
from numpy import random

x = random.rand(3, 5)

print(x)
```

Try it Yourself »

Generate Random Number From Array

The `choice()` method allows you to generate a random value based on an array of values.

The `choice()` method takes an array as a parameter and randomly returns one of the values.

Example

Return one of the values in an array:

```
from numpy import random

x = random.choice([3, 5, 7, 9])

print(x)
```

Try it Yourself »

Add a `size` parameter to specify the shape of the array.

Example

Generate a 2-D array that consists of the values in the array parameter (3, 5, 7, and 9):

```
from numpy import random

x = random.choice([3, 5, 7, 9], size=(3, 5))

print(x)
```

Try it Yourself »

‹ Previous Next ›

Google Maps
Range Sliders
Tooltips
Slideshow
Filter List
Sort List

SHARE

CERTIFICATES

HTML
CSS
JavaScript
SQL
Python
PHP
jQuery
Bootstrap
XML

Read More »

REPORT ERROR

PRINT PAGE

FORUM

ABOUT

Top Tutorials

JavaScript Tutorial
How To Tutorial
SQL Tutorial
Python Tutorial
W3.CSS Tutorial
Bootstrap Tutorial
PHP Tutorial
jQuery Tutorial
Java Tutorial
C++ Tutorial

Top References

HTML Reference
CSS Reference
JavaScript Reference
SQL Reference
Python Reference
W3.CSS Reference
Bootstrap Reference
PHP Reference
HTML Colors
jQuery Reference
Java Reference
Angular Reference

Top Examples

HTML Examples
CSS Examples
JavaScript Examples
How To Examples
SQL Examples
Python Examples
W3.CSS Examples
Bootstrap Examples
PHP Examples
jQuery Examples
Java Examples
XML Examples

Web Certificates

HTML Certificate
CSS Certificate
JavaScript Certificate
SQL Certificate
Python Certificate
jQuery Certificate
PHP Certificate
Bootstrap Certificate
XML Certificate

Get Certified »