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class template

std::uniform_real_distribution

<random>

```
template <class RealType = double> class uniform_real_distribution;
```

Uniform real distribution

Random number distribution that produces floating-point values according to a *uniform distribution*, which is described by the following *probability density function*:

$$p(x|a,b) = \frac{1}{b-a} \quad , \quad a \leq x < b$$

This distribution (also know as rectangular distribution) produces random numbers in a range `[a,b)` where all intervals of the same length within it are equally probable.

The distribution parameters, a and b, are set on construction.

To produce a random value following this distribution, call its member function operator().

Template parameters

`RealType`
A floating-point type. Aliased as member type `result_type`.
By default, this is `double`.

Member types

The following aliases are member types of `uniform_real_distribution`:

member type	definition	notes
`result_type`	The first template parameter (`RealType`)	The type of the numbers generated (defaults to `double`)
`param_type`	*not specified*	The type returned by member param.

Member functions

(constructor)	Construct uniform real distribution (public member function)
operator()	Generate random number (public member function)
reset	Reset distribution (public member function)
param	Distribution parameters (public member function)
min	Minimum value (public member function)
max	Upper bound of range (public member function)

Distribution parameters:

a	Lower bound of range (public member function)
b	Upper bound of range (public member function)

Non-member functions

operator<<	Insert into output stream (function template)
operator>>	Extract from input stream (function template)
relational operators	Relational operators (function template)

Example

```
// uniform_real_distribution
#include <iostream>
#include <random>

int main()
{
  const int nrolls=10000;  // number of experiments
  const int nstars=95;     // maximum number of stars to distribute
  const int nintervals=10; // number of intervals

  std::default_random_engine generator;
  std::uniform_real_distribution<double> distribution(0.0,1.0);

  int p[nintervals]={};

  for (int i=0; i<nrolls; ++i) {
    double number = distribution(generator);
    ++p[int(nintervals*number)];
  }

  std::cout << "uniform_real_distribution (0.0,1.0):" << std::endl;
  std::cout << std::fixed; std::cout.precision(1);

  for (int i=0; i<nintervals; ++i) {
    std::cout << float(i)/nintervals << "-" << float(i+1)/nintervals << ": ";
    std::cout << std::string(p[i]*nstars/nrolls,'*') << std::endl;
  }

```

```
29   return 0;
30 }
```

Possible output:

```
uniform_real_distribution (0.0,1.0):
0.0-0.1: *********
0.1-0.2: *********
0.2-0.3: *********
0.3-0.4: *********
0.4-0.5: *********
0.5-0.6: *********
0.6-0.7: *********
0.7-0.8: *********
0.8-0.9: *********
0.9-1.0: *********
```

See also

uniform_int_distribution	Uniform discrete distribution (class template)
generate_canonical	Generate canonical numbers (function template)