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class template                                                                      <random>
# std::uniform_int_distribution

```
template <class IntType = int> class uniform_int_distribution;
```

**Uniform discrete distribution**

Random number distribution that produces integer values according to a *uniform discrete distribution*, which is described by the following *probability mass function*:

$$P(i|a,b) = \frac{1}{b-a+1} \quad , \quad a \le i \le b$$

This distribution produces random integers in a range `[a,b]` where each possible value has an equal likelihood of being produced. This is the distribution function that appears on many trivial random processes (like the result of rolling a die).

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

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

For a discrete distribution that can have different probabilities for each possible value, see discrete_distribution.

### Template parameters

IntType
    An integer type. Aliased as member type `result_type`.
    By default, this is `int`.

### Member types

The following aliases are member types of `uniform_int_distribution`:

| member type | definition | notes |
|---|---|---|
| result_type | The first template parameter (IntType) | The type of the numbers generated (defaults to int) |
| param_type | *not specified* | The type returned by member param. |

### Member functions

| | |
|---|---|
| **(constructor)** | Construct uniform discrete 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** | Maximum value (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

```cpp
// uniform_int_distribution
#include <iostream>
#include <random>

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

  std::default_random_engine generator;
  std::uniform_int_distribution<int> distribution(0,9);

  int p[10]={};

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

  std::cout << "uniform_int_distribution (0,9):" << std::endl;
  for (int i=0; i<10; ++i)
    std::cout << i << ": " << std::string(p[i]*nstars/nrolls,'*') << std::endl;

  return 0;
}
```

Possible output:

Easily
manage
files

```
uniform_int_distribution (0,9):
0: *********
1: *********
2: *********
3: *********
4: *********
5: *********
6: *********
7: *********
8: *********
9: *********
```

## See also

| | |
|---|---|
| **uniform_real_distribution** | Uniform real distribution (class template ) |
| **bernoulli_distribution** | Bernoulli distribution (class ) |

```
uniform_int_distribution (0,9):
0: *********
1: *********
2: *********
3: *********
4: *********
5: *********
6: *********
7: *********
8: *********
9: *********
```