C++ For C Programmers Part B Ira Pohl May 2016

The following document talks about the new <random> library in C++11 and explains why

It is a significant improvement over what is found in C.

Random Number Generation in C++11 Document #: WG21 N3551 Date: 2013-03-12 Revises: None Project: JTC1.22.32 Programming Language C++ Reply to: Walter E. Brown

<http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2013/n3551.pdf>

We use < random > in the following code:

//Use of random

//Ira Pohl April 2016

#include<cstddef> //ptrdiff\_t

#include<iostream>

#include<random>

#include<vector>

#include<algorithm>

#include<ctime> //use time(nullptr) for seed

using namespace std;

default\_random\_engine e(time(nullptr)); //seed here

uniform\_real\_distribution<double> u(0, 1); //use a uniform distribution

template< typename RandomAccess>

RandomAccess

pickRandEl( RandomAccess first, RandomAccess last)

{

ptrdiff\_t temp = last-first;

return first + u(e)\*temp;

}

int main()

{

int size\_d = 1000;

vector<int> data(size\_d);

for(auto& element: data)

element = 10000 \* u(e); //uniform distribution with default engine

double accum = accumulate(data.begin(), data.end(), 0.0);

cout << "average value is " << accum/(1.0 \* size\_d);

cout << endl;

for(int i = 0; i < 100; ++i)

cout << \*pickRandEl(data.begin(), data.end()) << '\t';

cout << endl;

auto mm = minmax\_element(data.begin(), data.end());

cout << "min and max \n";

cout << \*mm.first << " second " << \*mm.second<< endl;

}