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#include<cmath>
#include<cstdlib>

double random_uniform_0_1()
{
    return double(rand())/double(RAND_MAX);
}

double random_normal()
{
    double U1, U2, V1, V2;
    double S=2;

    while (S >= 1)
    {
        U1 = random_uniform_0_1();
        U2 = random_uniform_0_1();
        V1 = 2.0 * U1 - 1.0;
        V2 = 2.0 * U2 - 1.0;
        S = pow(V1, 2) + pow(V2, 2);
    }

    double X1 = V1 * sqrt((-2.0 * log(S)) / S);
    return X1;
}
```