```
// TinyMT.cs

using System;
using System.Runtime.InteropServices;

namespace ToyBox {
    public class TinyMT {
        public struct tinymt32_t {
            uint status1,status2,status3,status4;   // C だと uint status[4]
            uint mat1;
            uint mat2;
            uint tmat;

            public tinymt32_t(uint inMat1,uint inMat2,uint inTMat) {
                status1=status2=status3=status4=4;
                mat1=inMat1;
                mat2=inMat2;
                tmat=inTMat;
            }
        };

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public void tinymt32_init(ref tinymt32_t outRandStatus,int inSeed);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public unsafe void tinymt32_init_by_array(ref tinymt32_t outRandStatus,
                                                    UInt32* inInitKey,int inKeyLength);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public uint tinymt32_generate_uint32(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public float tinymt32_generate_float(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public float tinymt32_generate_floatOO(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public float tinymt32_generate_floatOC(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public float tinymt32_generate_float01(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public float tinymt32_generate_float12(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public double tinymt32_generate_32double(ref tinymt32_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public void tinymt32_jump(ref tinymt32_t inRandStatus,
                                                UInt64 inLowerStep,UInt64 inUpperStep,
                                                string inPolyStr);

        public struct tinymt64_t {
            ulong status1,status2;  // uint64_t status[2];
            uint mat1;
            uint mat2;
            ulong tmat;

            public tinymt64_t(uint inMat1,uint inMat2,ulong inTMat) {
                status1=status2=0;
                mat1=inMat1;
                mat2=inMat2;
                tmat=inTMat;
            }
        };

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public void tinymt64_init(ref tinymt64_t outRandStatus,int inSeed);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public unsafe void tinymt64_init_by_array(ref tinymt64_t outRandStatus,
                                                    UInt64* inInitKey,int inKeyLength);
```

```
        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public UInt64 tinymt64_generate_uint64(ref tinymt64_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public double tinymt64_generate_double(ref tinymt64_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public double tinymt64_generate_double00(ref tinymt64_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public double tinymt64_generate_double0C(ref tinymt64_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public double tinymt64_generate_double01(ref tinymt64_t inRandStatus);

        [DllImport("TinyMT.dll",CallingConvention=CallingConvention.Cdecl)]
        extern static public double tinymt64_generate_double12(ref tinymt64_t inRandStatus);

        tinymt32_t mRand32Status=new tinymt32_t(0x8f7011ee,0xfc78ff1f,0x3793fdff);
        tinymt64_t mRand64Status=new tinymt64_t(0xfa051f40,0xffd0fff4,0x58d02ffeffbfffbc);
        string kJumpPolyStr="d8524022ed8dff4a8dcc50c798faba43";

        public TinyMT() {
            tinymt32_init(ref mRand32Status, 1);
            tinymt64_init(ref mRand64Status, 1);
        }

        public uint GenerateUInt() {
            return tinymt32_generate_uint32(ref mRand32Status);
        }

        public float GenerateFloat() {
            return tinymt32_generate_float(ref mRand32Status);
        }

        public float GenerateFloat00() {
            return tinymt32_generate_float00(ref mRand32Status);
        }

        public float GenerateFloat0C() {
            return tinymt32_generate_float0C(ref mRand32Status);
        }

        public float GenerateFloat01() {
            return tinymt32_generate_float01(ref mRand32Status);
        }

        public float GenerateFloat12() {
            return tinymt32_generate_float12(ref mRand32Status);
        }

        public double Generate32Double() {
            return tinymt32_generate_32double(ref mRand32Status);
        }

        public void Jump32(ulong inStep) {
            tinymt32_jump(ref mRand32Status, inStep,0,kJumpPolyStr);
        }

        public void Jump32(ulong inHighStep,ulong inLowStep) {
            tinymt32_jump(ref mRand32Status,inLowStep,inHighStep,kJumpPolyStr);
        }

        // [0,2^64)
        public ulong GenerateUInt64() {
            return tinymt64_generate_uint64(ref mRand64Status);
        }

        // [0,1)
        public double GenerateDouble() {
            return tinymt64_generate_double(ref mRand64Status);
        }
```

```
        // (0,1)
        public double GenerateDouble00() {
            return tinymt64_generate_double00(ref mRand64Status);
        }

        // (0,1]
        public double GenerateDouble0C() {
            return tinymt64_generate_double0C(ref mRand64Status);
        }

        // [0,1)
        public double GenerateDouble01() {
            return tinymt64_generate_double01(ref mRand64Status);
        }

        // [1,2)
        public double GenerateDouble12() {
            return tinymt64_generate_double12(ref mRand64Status);
        }
    }
}
```