Diamond

Note: This problem is intended to be extremely challenging.

Create a C++ program that will create the pattern below.

Your program should use nested loops.

Note, the number of rows/columns should be odd.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
3	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X
4	X	X	X	X	X	X	X						X	X	X	X	X	X	X
5	X	X	X	X	X	X								X	X	X	X	X	X
6	X	X	X	X	X										X	X	X	X	X
7	X	X	X	X												X	X	X	X
8	X	X	X														X	X	X
9	X	X																X	X
10	X																		X
11	X	X																X	X
12	X	X	X														X	X	X
13	X	X	X	X												X	X	X	X
14	X	X	X	X	X										X	X	X	X	X
15	X	X	X	X	X	X								X	X	X	X	X	X
16	X	X	X	X	X	X	X						X	X	X	X	X	X	X
17	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X
18	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
19	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Solution

```cpp
#include <iostream>

using namespace std;

int main()
{
    int size = 35; // must be odd and >= 3
    int half = size / 2;

    for(int i = 1; i <= size; i++)
    {
        for(int j = 1; j <= size; j++)
        {
            if(i <= half + 1)
            {
                if((j <= half + 2 - i) || j >= half + i)
                {
                    cout << "x";
                }
                else
                {
                    cout << " ";
                }
            }
            else
            {
                if((j <= i - half) || j >= size + half + 1 - i)
                {
                    cout << "x";
                }
                else
                {
                    cout << " ";
                }
            }
        }
        cout << "\n";
    }

    return 0;
}
```