

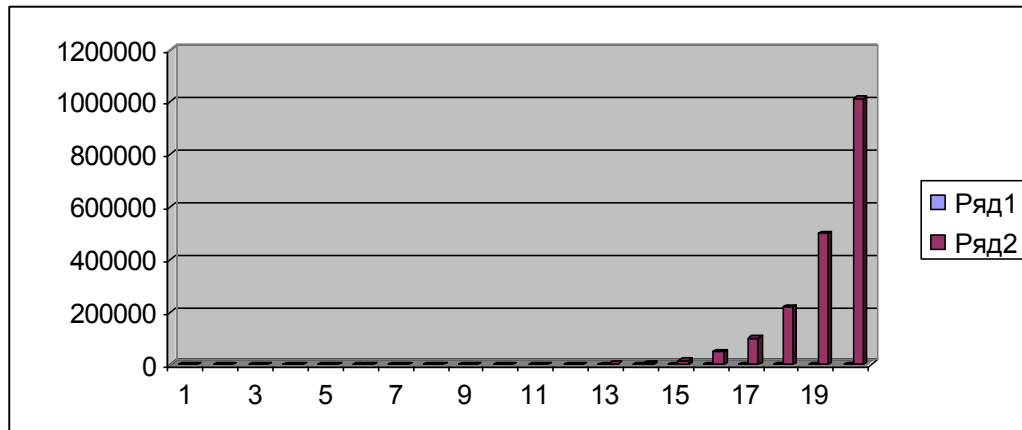
Practice 5

Random hill climbing

We need to show how much iterations in average of 10 runs we need to find code of 2 to 20 binary genes.

We always need to generate our chromosome at random.

Result



Code:

```
#include <stdafx.h>
#include <iostream>
#include <fstream>
#include <vector>
#include <time.h>

using namespace std;

int main()
{
    srand(time(NULL));
    ofstream file("OutData.txt", ios::out);

    for (int length = 2; length < 21; length++)
    {
        vector<int> result;
        for (int i = 0; i < length; i++)
        {
            int b = rand() % 30;
            if (b < 15)
            {
                result.push_back(0);
            }
            else
            {
                result.push_back(1);
            }
        }

        int k = 0;
        int step = 0;
        while (k < 10)
        {
            step++;
            vector<int> tmp;
            for (int i = 0; i < length; i++)
            {
                int b = rand() % 30;
```

```

        if (b < 15)
        {
            tmp.push_back(0);
        }
        else
            tmp.push_back(1);
    }
    if (result == tmp)
    {
        file << step << endl;
        step = 0;
        k++;
        result.clear();
        for (int i = 0; i < length; i++)
        {
            int b = rand() % 30;
            if (b < 15)
            {
                result.push_back(0);
            }
            else
                result.push_back(1);
        }
    }
    }
    file << "file1" << endl;
}

file.close();
system("pause");
return 0;
}

```