Задание 1

```cpp
#include <iostream>
#include <vector>
#include <fstream>
#include <sstream>
#include <thread>
#include <future>

void count(std::string file_path, std::string word, int& counter) {
    std::ifstream stream(file_path);
    std::vector<std::string> words;
    counter = 0;
    if (stream.is_open()) {
        while (!stream.eof()) {
            std::string temp_;
            stream >> temp_;
            if (temp_ == word) {
                counter++;
            }
        }
    }
}

int main()
{
    std::ifstream fin("files.txt");
    std::vector<std::string> files;

    while (!fin.eof()) {
        std::stringstream buffer;
        std::string file_path;
        fin >> file_path;
        files.push_back(file_path);
    }

    std::vector<int> counters(files.size());

    /*for (auto & file : files)
    {
        std::cout << file << "\n";
    }*/

    std::string word = "std::string";
    std::vector<std::thread> threads(files.size());

    auto start1 = std::chrono::system_clock::now();
    for (int i = 0; i < files.size(); i++)
    {
        threads[i]=std::thread(count, files.at(i), word,
                               std::ref(counters[i]));
    }

    for (int i = 0; i < files.size(); i++)
    {
        threads[i].join();
    }
    auto stop1 = std::chrono::system_clock::now();
    std::cout << "Thread time: " << std::chrono::duration<double>(stop1 - start1).count() << " sec.\n";

    for (size_t i = 0; i < counters.size(); i++)
    {
        std::cout << "counter " << i <<" "<< counters[i] << "\n";
    }
```

```
    counters.clear();
    counters.resize(files.size());

    // async
    auto start2 = std::chrono::system_clock::now();
    for (int i = 0; i < files.size(); i++)
    {
        auto res = std::async(std::launch::async, count, files.at(i), word, std::ref(counters[i]));
    }
    auto stop2 = std::chrono::system_clock::now();
    std::cout << "Async time: " << std::chrono::duration<double>(stop2 - start2).count() << " sec.\n";

    for (size_t i = 0; i < counters.size(); i++)
    {
        std::cout << "counter " << i <<" "<< counters[i] << "\n";
    }
}
```

Результаты измерений:

размерность	Thread (в сек.)	Async (в секундах)
2 файла	0.000148195	0.000121301
4 файла	0.000208526	0.000201303
8 файлов	0.000486216	0.000522642

Получились примерно одинаковые результаты.

Задание 2