

# Отчет

## Алгоритм: `std::remove_if`

**Задача: удалить из случайного массива числа, меньшие 18**

### Код программы:

```
#include <iostream>
#include <vector>
#include <algorithm>
#include <execution>
#include <ctime>
#include <random>

using namespace std;

vector<int> random_numbers(long size) {
    vector<int> numbers;
    for (int i = 0; i < size; i++) {
        numbers.push_back(rand() % 101);
    }
    return numbers;
}

bool remove_number(int number) {
    return number < 18;
}

double sequential_execution(long size) {
    auto mas = random_numbers(size);

    auto start_time = clock();
    std::remove_if(mas.begin(), mas.end(), remove_number);
    auto end_time = clock();
    double sequent_time = (double)(end_time - start_time) / CLOCKS_PER_SEC;
    std::cout << "Sequent time :" << sequent_time << endl;

    return sequent_time;
}

double parallel_execution(long size) {
    auto mas = random_numbers(size);

    auto start_time = clock();
    std::remove_if(std::execution::par, mas.begin(), mas.end(), remove_number);
    auto end_time = clock();
    double parallel_time = (double)(end_time - start_time) / CLOCKS_PER_SEC;
    std::cout << "Parallel time :" << parallel_time << endl;

    return parallel_time;
}

int main() {

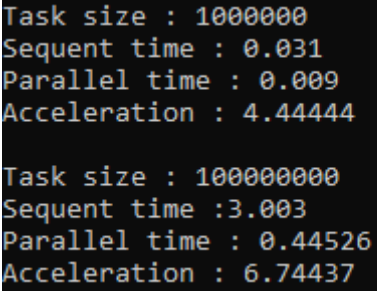
    std::cout << "\nTask size : " << 1000000 << endl;

    double sequent_time = sequential_execution(1000000);
    double parallel_time = parallel_execution(1000000);

    double acceleration_factor = sequent_time / parallel_time;
    std::cout << "Acceleration : " << acceleration_factor << endl;
```

```
std::cout << "\nTask size : " << 100000000 << endl;  
  
sequent_time = sequential_execution(100000000);  
parallel_time = parallel_execution(100000000);  
  
double acceleration_factor = sequent_time / parallel_time;  
std::cout << "Acceleration : " << acceleration_factor << endl;  
}
```

**Результат:**



```
Task size : 1000000  
Sequent time : 0.031  
Parallel time : 0.009  
Acceleration : 4.44444  
  
Task size : 100000000  
Sequent time :3.003  
Parallel time : 0.44526  
Acceleration : 6.74437
```