

Додаток 1  
Міністерство освіти і науки України  
Національний технічний університет України «Київський політехнічний інститут імені Ігоря  
Сікорського»  
Факультет інформатики та обчислювальної техніки  
Кафедра інформатики та програмної інженерії

Звіт  
з лабораторної роботи № 1 з дисципліни «Основи програмування»  
«Робота з текстовими файлами»  
Варіант 12

Виконав студент: ІП-13 Дойчев Костянтин Миколайович

Перевірила: Вечерковська Анастасія Сергіївна

Київ 2021

# Лабораторна робота №1

Тема: Текстові файли

## Постановка задачі

Створити текстовий файл. Визначити в кожному його рядку слова, які починаються на задану літеру. Зберегти знайдені слова у новому текстовому файлі. Як роздільники між словами застосовувати пробіли

Код:

Файл - main.cpp

```
#include <iostream>

#include "Utils.h"

using namespace std;

int main() {
    const string APPEND_MODE = "a";
    const string TRUNCATE_MODE = "t";
    const string YES = "y";
    const string NO = "n";

    char terminatingKey;
    cout << "Enter the terminating key: ";
    cin >> terminatingKey;

    cout << "Enter the text: ";
    string input = getInput(terminatingKey);

    string inputFilename;
    do {
```

```

cout << "Enter the file name: ";
    cin >> inputFilename;
} while (inputFilename.length() < 3);

string inputMode;
do {

    cout << "Would you like to append the text or replace the old one? Enter
'" << APPEND_MODE << "' to append or '"
        << TRUNCATE_MODE << "' to truncate(replace): ";
    cin >> inputMode;
} while (inputMode != APPEND_MODE && inputMode != TRUNCATE_MODE);

fillFile(inputFilename, inputMode, input, APPEND_MODE);

cout << "The file has been modified! Open " << inputFilename << endl;

cout <<
"-----"
<< endl;
cout << "Input: " << input << endl;
cout <<
"-----"
<< endl;

char searchingCharacter;
cout << "Enter the searching character: ";
cin >> searchingCharacter;

string caseSensitiveResult;
cout << "Should the filter be case sensitive? Enter '" << YES << "' for yes
or '" << NO << "' for no: ";
cin >> caseSensitiveResult;

bool isCaseSensitive = caseSensitiveResult == YES;
string outputFilename;
do {
    cout << "Enter the file name where the result will be stored: ";
    cin >> outputFilename;
} while (inputFilename.length() < 3);

string outputMode;
do {
    cout << "Would you like to append the text or replace the old one? Enter
'" << APPEND_MODE << "' to append or '"
        << TRUNCATE_MODE << "' to truncate(replace): ";
    cin >> outputMode;
} while (outputMode != APPEND_MODE && outputMode != TRUNCATE_MODE);

```

```

    string filteredWords = filterWords(input, searchingCharacter,
isCaseSensitive);
    fillFile(outputFilename, outputMode, filteredWords, APPEND_MODE);
    cout << "The file has been modified! Open " << outputFilename << endl;

cout<<"-----"
---" << endl;
    cout << "Output: " << filteredWords << endl;
    cout <<
"-----"
<< endl;

    return 0;
}

```

Файл: Utils.cpp

```

//
// Created by Kostia on 09.02.2022.
//

#include "Utils.h"

string getInput(const char &terminatingKey) {
    string input;
    getline(cin, input, terminatingKey);
    return input;
}

string getInput(int terminatingKey) {
    string input;
    getline(cin, input, char(terminatingKey));
    return input;
}

void fillFile(const string &filename, const string &mode, const string
&content, const string & APPEND_MODE){
    ofstream file;
    if (mode == APPEND_MODE) {
        file.open(filename, ios::out | ios::app);
    } else {

```

```

file.open(filename, ios::out | ios::trunc);
}

if (!file.is_open()) {
    throw runtime_error("An error has occurred while changing the file");
}

file << content;

file.close();
}

string filterWords(const string& text, char filteringChar, bool
isCaseSensitive){
    string filtered;
    string modified = replaceAll(text, "\n", " ");
    vector<string> words = split(text, modified);
    for (string word : words) {
        string currentWord = word;
        char currentChar = filteringChar;
        if (!isCaseSensitive){
            currentWord = toLowerCase(word);
            currentChar = (char) tolower(filteringChar);
        }
        if (currentWord[0] == currentChar){
            filtered.append(currentWord + " ");
        }
    }
    return filtered;
}

```

Файл: string-utils.cpp

```

//
// Created by Kostia on 16.02.2022.
//

#include "string-utils.h"

vector<string> split(string text, const string &divider) {
    vector<string> output;
    size_t position = 0;
    string chunk;

```

```

while ((position = text.find(divider)) != string::npos) {
    chunk = text.substr(0, position);
    output.push_back(chunk);
    text.erase(0, position + divider.length());
}
if (text.length() > 0) {
    output.push_back(text);
}

return output;
}

string toLowerCase(const string &str){
    size_t strLength = str.length();
    string lower;
    for (size_t i = 0; i < strLength; ++i) {
        lower.push_back((char) tolower(str[i]));
    }
    return lower;
}

string replaceAll (string str, const string &substring, const string
&newSubstring) {
    string copy = str;
    size_t position = 0;
    size_t substringLength = substring.length();
    while ((position = copy.find(substring)) != string::npos) {
        copy.replace(position, substringLength, newSubstring);
    }

    return copy;
}

```

Консоль:

```

/Users/Kostia/Documents/Programming/kpi/programming-basics/C-plus-plus/bachelor/year-1/semester-2/lab-1/cmake-build-debug/lab_1
Enter the terminating key: }
Enter the text: Hello world
How are you?
nice to c u HeRe
}
Enter the file name: ../input.txt
Would you like to append the text or replace the old one? Enter 'a' to append or 't' to truncate(replace): t
The file has been modified! Open ../input.txt
-----
Input:
Hello world
how are you?
nice to c u HeRe

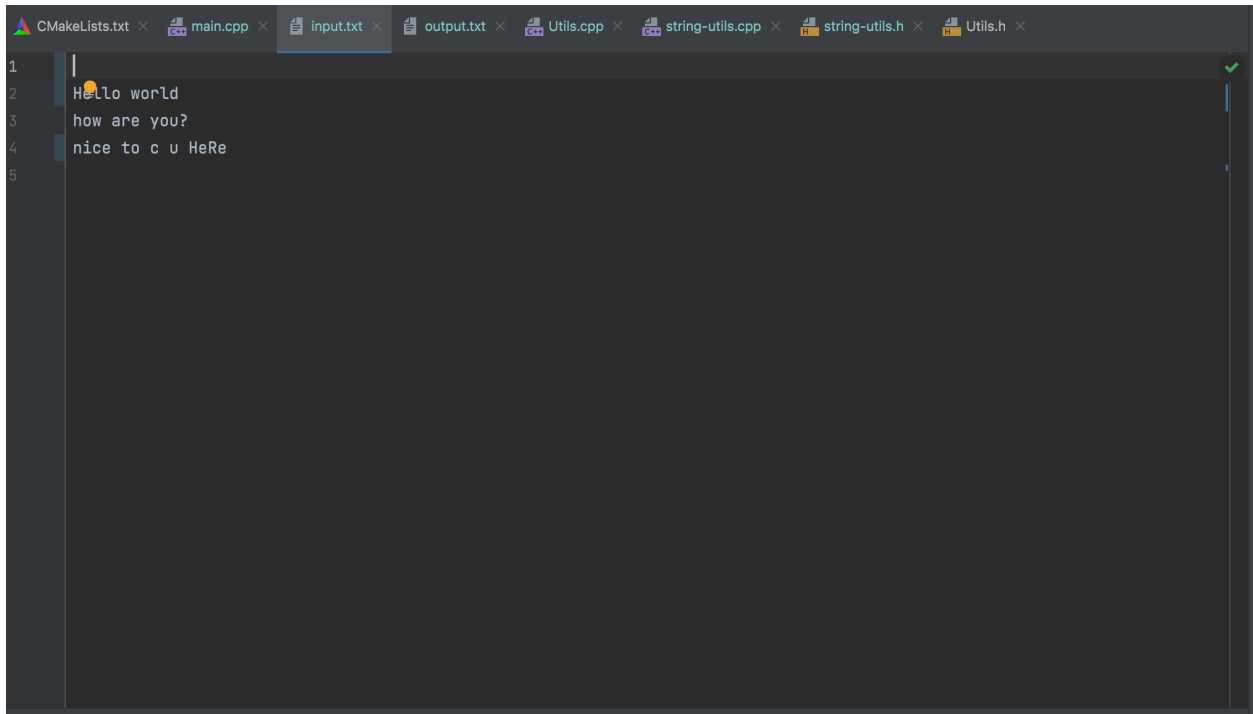
-----

Enter the searching character: H
Should the filter be case sensitive? Enter 'y' for yes or 'n' for no: y
Enter the file name where the result will be stored: ../output.txt
Would you like to append the text or replace the old one? Enter 'a' to append or 't' to truncate(replace): t
The file has been modified! Open ../output.txt
-----
Output: Hello HeRe
-----

Process finished with exit code 0
|

```

Файл: input.txt



The screenshot shows a code editor with multiple tabs. The active tab is 'input.txt', which contains the following text:

```

1 |
2 | Hello world
3 | how are you?
4 | nice to c u HeRe
5 |

```

The editor also shows other tabs: CMakeLists.txt, main.cpp, output.txt, Utils.cpp, string-utils.cpp, string-utils.h, and Utils.h.

Файл: output.txt

The image shows a code editor interface with a dark theme. The top of the window features a tab bar with several open files: `CMakeLists.txt`, `main.cpp`, `input.txt`, `output.txt` (which is the active tab), `Utils.cpp`, `string-utils.cpp`, `string-utils.h`, and `Utils.h`. The main editing area displays the contents of `output.txt`, which consists of a single line of text: `Hello HeRe`. A line number '1' is visible on the left side of the editor. A green checkmark icon is located in the top right corner of the editor area, indicating that the file has been successfully saved or is in a valid state.

```
1 | Hello HeRe
```