

[Assignment 1 & 20152008, KUSDavletov Ernar]

# [OOP]Assign1

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## 1. Descriptions

The tray of the files was broken into fragments. All files on the tray were identical, all of them broke into exactly two fragments, and all file fragments were found. Unfortunately, the files didn't all break in the same place, and the fragments were completely mixed up by their fall to the floor. The program determines the bit pattern the files contained.

## 2. Code

```
uni06.unist.ac.kr - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles

#include <iostream>
using namespace std;

bool final_check(string beg[], int beg_length, string end[], int end_length, string both[], int both_length){
    for (int i = 0; i < beg_length; i++){ //checking the content of the array
        if (beg[i] != ""){
            return false;
        }
    }
    for (int i = 0; i < end_length; i++){ //checking the content of the array
        if (end[i] != ""){
            return false;
        }
    }
    for (int i = 0; i < both_length; i++){ //checking the content of the array
        if (both[i] != ""){
            return false;
        }
    }
    return true;
}

bool check(string mass[], int first, int second, int number){
    string both[300], beg[300], end[300]; //dividing initial array into three
    string example; //the correct(answer) string
    example = string(mass[first]) + string(mass[second]);
    int str_length = example.length(); //correct string's length
    int both_length = 0, beg_length = 0, end_length = 0; //the length of three new arrays
    int var_length = 0; //the length of the variable strings
    for (int i = 0; i < number; i++){ //dividing strings to the arrays
        var_length = mass[i].length();
        if (example.substr(0, var_length) == mass[i] && example.substr(str_length - var_length, var_length) == mass[i]){
            both[both_length] = mass[i];
            both_length += 1;
        }
        else if (example.substr(0, var_length) == mass[i]){
            beg[beg_length] = mass[i];
            beg_length += 1;
        }
        else if (example.substr(str_length - var_length, var_length) == mass[i]){
            end[end_length] = mass[i];
            end_length += 1;
        }
        else{ //if it does not fit the conditions then return false
            return false;
        }
    }
    //searching pairs and delete them
    for (int i = 0; i < beg_length; i++){
        int find_length = str_length - beg[i].length();
        for (int j = 0; j < end_length; j++){
            if (end[j].length() == find_length){
                beg[i] = "";
                end[j] = "";
                break;
            }
        }
    }
    for (int i = 0; i < beg_length; i++){
        int find_length = str_length - beg[i].length();
        for (int j = 0; j < both_length; j++){
            if (both[j].length() == find_length){
                beg[i] = "";
                both[j] = "";
                break;
            }
        }
    }
    for (int i = 0; i < both_length; i++){
        int find_length = str_length - both[i].length();
        for (int j = 0; j < end_length; j++){
            if (end[j].length() == find_length){
                both[i] = "";
                end[j] = "";
                break;
            }
        }
    }
    return true;
}

-- INSERT --
38,29 Top
Connected to uni06.unist.ac.kr SSH2 - aes128-cbc - hmac-md5 - nc 191x39 NUM
```

```
uni06.unist.ac.kr - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles

    }
    else if (example.substr(str_length - var_length, var_length) == mass[i]){
        end[end_length] = mass[i];
        end_length += 1;
    }
    else{ //if it does not fit the conditions then return false
        return false;
    }
}
//searching pairs and delete them
for (int i = 0; i < beg_length; i++){
    int find_length = str_length - beg[i].length();
    for (int j = 0; j < end_length; j++){
        if (end[j].length() == find_length){
            beg[i] = "";
            end[j] = "";
            break;
        }
    }
}
for (int i = 0; i < beg_length; i++){
    int find_length = str_length - beg[i].length();
    for (int j = 0; j < both_length; j++){
        if (both[j].length() == find_length){
            beg[i] = "";
            both[j] = "";
            break;
        }
    }
}
for (int i = 0; i < both_length; i++){
    int find_length = str_length - both[i].length();
    for (int j = 0; j < end_length; j++){
        if (end[j].length() == find_length){
            both[i] = "";
            end[j] = "";
            break;
        }
    }
}

-- INSERT --
76,12 38%
Connected to uni06.unist.ac.kr SSH2 - aes128-cbc - hmac-md5 - nc 191x39 NUM
```

```
uni06.unist.ac.kr - default - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles

}
for (int i = 0; i < both_length; i++){
    int find_length = str_length - both[i].length();
    for (int j = 0; j < both_length; j++){
        if (both[j].length() == find_length){
            both[i] = "";
            both[j] = "";
            break;
        }
    }
}
//checking whether all strings are empty or not
if (final_check(beg, beg_length, end, end_length, both, both_length) == true){
    return true;
}
else{
    return false;
}
}
}

int main(){
    int tests_number; //number of tests
    string input; //input string
    cin >> tests_number;
    getline(cin, input);
    for (int i = 0; i < tests_number; i++){
        string arr[300]; //array to store all input strings
        int count = 0; //number to strings
        int total_length = 0; //length of all strings combined
        while (true){
            getline(cin, input); //read a line
            if (input.length() == 0){ //if empty go to next test
                break;
            }
            else{
                arr[count] = input; // else store string into array
            }
        }
    }
}

-- INSERT --
114,70 76%
```

Connected to uni06.unist.ac.kr SSH2 - aes128-cbc - hmac-md5 - nc 191x39 NUM

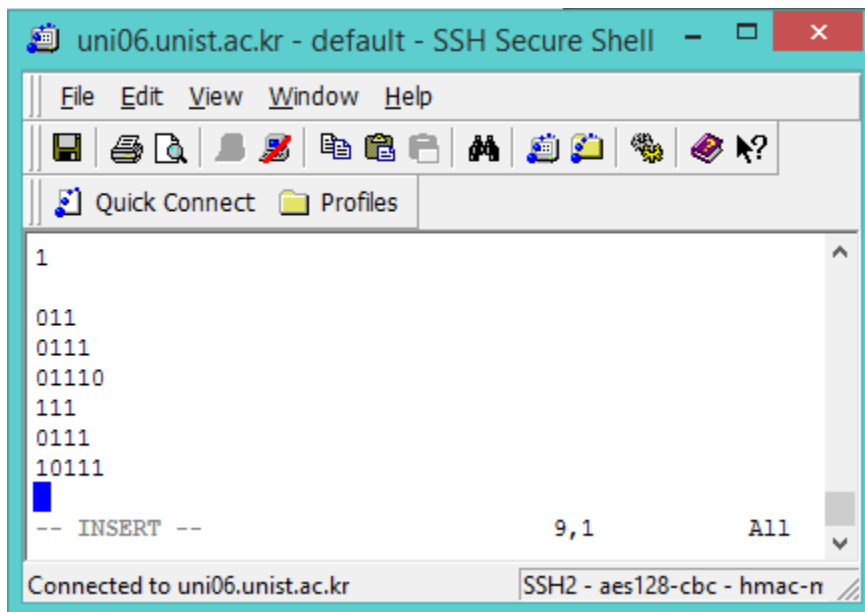
```
total_length += input.length(); //to compute the length of all strings combined
count += 1; //count the number of the strings
}
}
int string_length = total_length / (count / 2); //the length of the final(answer) string
int search_length = string_length - arr[0].length(); //the length of the pair which is pair to the first string
for (int k = 1; k < count; k++){ //searching pair to the first string
    if (arr[k].length() == search_length){
        if (check(arr, 0, k, count) == true){ //checking two possibilities, first-found or found-first
            cout << string(arr[0]) + string(arr[k]) << endl;
            break;
        }
        else if (check(arr, k, 0, count) == true){
            cout << string(arr[k]) + string(arr[0]) << endl;
            break;
        }
    }
}
if (i < tests_number - 1){ //to make blank between answers
    cout << endl;
}
}
return 0;
}

-- INSERT --
138,2 Bot
```

Connected to uni06.unist.ac.kr SSH2 - aes128-cbc - hmac-md5 - nc 191x39 NUM

### 3. Sample input

First sample input



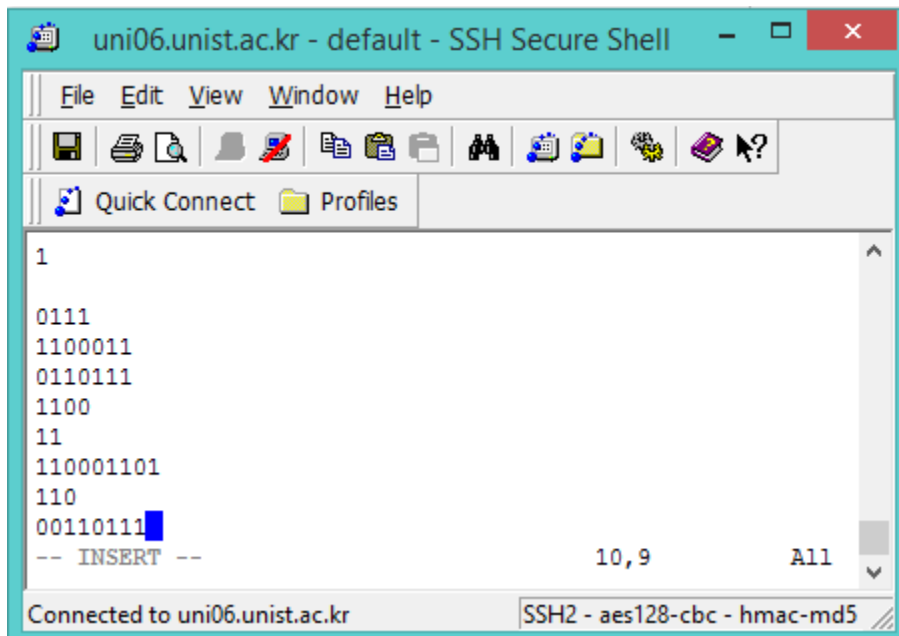
The screenshot shows a window titled "uni06.unist.ac.kr - default - SSH Secure Shell". The menu bar includes File, Edit, View, Window, and Help. The toolbar contains icons for file operations and system functions. Below the toolbar, there are tabs for "Quick Connect" and "Profiles". The main text area displays the following input:

```
1
011
0111
01110
111
0111
10111

```

The cursor is at the end of the last line. The status bar at the bottom indicates "Connected to uni06.unist.ac.kr" and "SSH2 - aes128-cbc - hmac-n".

Second sample input



The screenshot shows a window titled "uni06.unist.ac.kr - default - SSH Secure Shell". The menu bar includes File, Edit, View, Window, and Help. The toolbar contains icons for file operations and system functions. Below the toolbar, there are tabs for "Quick Connect" and "Profiles". The main text area displays the following input:

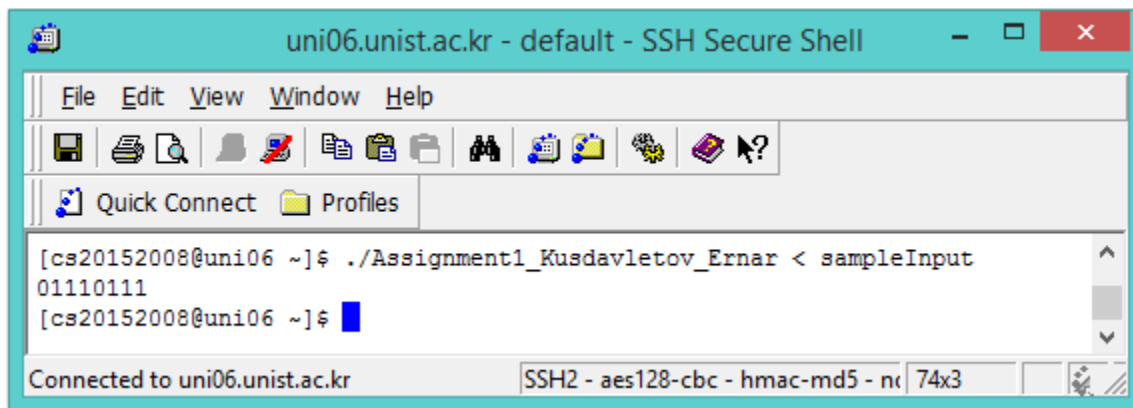
```
1
0111
1100011
0110111
1100
11
110001101
110
00110111

```

The cursor is at the end of the last line. The status bar at the bottom indicates "Connected to uni06.unist.ac.kr" and "SSH2 - aes128-cbc - hmac-md5".

#### 4. Sample output

First sample output

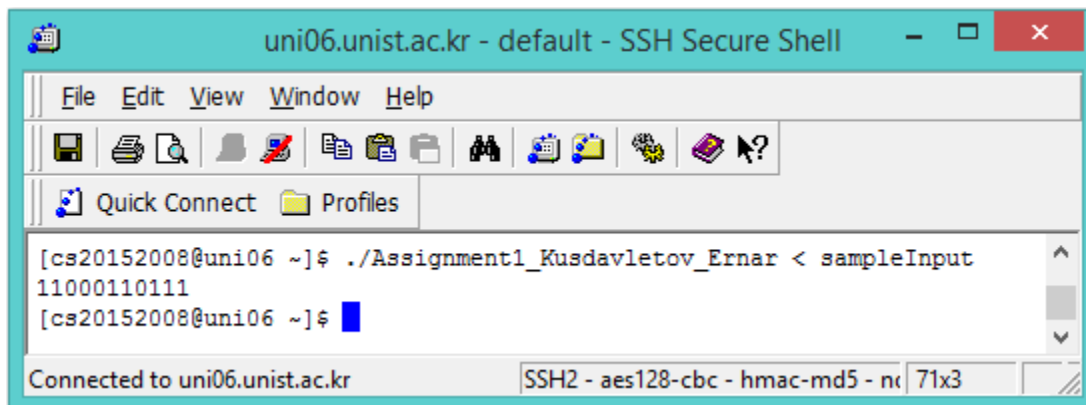


The screenshot shows an SSH Secure Shell window titled "uni06.unist.ac.kr - default - SSH Secure Shell". The window has a menu bar with "File", "Edit", "View", "Window", and "Help". Below the menu bar is a toolbar with various icons. A "Quick Connect" button and a "Profiles" folder icon are also visible. The main terminal area displays the following text:

```
[cs20152008@uni06 ~]$ ./Assignment1_Kusdavletov_Ernar < sampleInput
01110111
[cs20152008@uni06 ~]$
```

The status bar at the bottom indicates "Connected to uni06.unist.ac.kr" and "SSH2 - aes128-cbc - hmac-md5 - n". The window size is 74x3.

Second sample output



The screenshot shows an SSH Secure Shell window titled "uni06.unist.ac.kr - default - SSH Secure Shell". The window has a menu bar with "File", "Edit", "View", "Window", and "Help". Below the menu bar is a toolbar with various icons. A "Quick Connect" button and a "Profiles" folder icon are also visible. The main terminal area displays the following text:

```
[cs20152008@uni06 ~]$ ./Assignment1_Kusdavletov_Ernar < sampleInput
11000110111
[cs20152008@uni06 ~]$
```

The status bar at the bottom indicates "Connected to uni06.unist.ac.kr" and "SSH2 - aes128-cbc - hmac-md5 - n". The window size is 71x3.