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FACULTY OF INFORMATION TECHNOLOGY
SOFTWARE ENGINEERING DEPARTMENT
ADVANCED PROGRAM IN COMPUTER SCIENCE
COURSE: **PROGRAMMING SYSTEMS**
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WEEK 07

STRING – ARRAY OF CHARACTERS

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HCMC, November 30, 2015

TABLE OF CONTENTS

1	Requirements	3
2	Instruction	3
3	Exercises	4
4	In-class Assignment (IA)	5
5	Homework (HW)	5

1 Requirements

Complete the following exercises, with several requirements:

1. Programming language: C++
2. IDE: Microsoft Visual Studio 2010
3. Solution name: StudentID_WeekXX. XX: 01-10
4. Project name: ExYY. YY:01-99 (hope we don't have 99 exercises/week ☺)
5. At the beginning of each source code file, write down 3 types of info: (1) Student ID; (2) Full name; (3) Exercise XX
6. Remove all folders Debug, ipch, and file .sdf before submitting to Moodle
7. Your file name: StudentID_WeekXX.rar/zip. For example, 0512299_Week01.zip

2 Instruction

In C++, we have data type `char` to store a single character such as 'a', '0' or '\$'.

There is no data type string, to store your name, your home address, ...

Therefore, to store them, we use an array of characters.

We consider a string as a collections of characters.

For instance, name of your 2nd TA is Ho Tuan Thanh. It's a string of 13 characters. To declare a variable to store this name, we use `char name[14]`. It's an array of 14 characters. So, why 14? Look at this.

H	o		T	u	a	n		T	h	a	n	h	\0
---	---	--	---	---	---	---	--	---	---	---	---	---	----

The last character of a string is '\0', to mark the end position of a string.

Allow user to input a string:

```
char name[14];  
cin.getline(name, 14, '\n');
```

Output a string to console screen:

```
cout<<"Your name: "<<name<<endl;
```

Use bracket operator to access a specific character in a string

```
char c=name[0];  
cout<<"The first character of your name is "<<c<<endl;
```

```
for(int i=0;i<strlen(name);i++)
{
    cout<<name[i]<<endl;
}
```

Use strlen to get length of a string:

```
int len=strlen(name);
cout<<"Your name has "<<len<<" characters\n";
```

Use strcpy to assign a string to a variable:

```
strcpy(name, "Truong Phuoc Loc");
```

Use strcat to append a string to another string. For example:

```
strcpy(name, "Truong");
strcat(name, " Phuoc");
strcat(name, " Loc");
cout<<name<<endl;
// Truong Phuoc Loc
```

Use strcmp to compare 2 string. There are 3 possible output: less than 0 (str1<str2), equals to 0 (str1=str2), greater than 0 (str1>str2).

```
int res=strcmp(name, "Truong Phuoc Loc");
if(res!=0)
    cout<<"You are not Mr. Truong Phuoc Loc\n";
```

Another function, stricmp, compares string1 and string2 without sensitivity to case. All alphabetic characters in the two arguments string1 and string2 are converted to lowercase before the comparison. For example, if name1 is “Thanh” and name2 is “than”, strcmp function considers them as different string but stricmp considers them as the same.

There are a great number of useful functions can be applied for a string, you should take a look at library string.h.

3 Exercises

Complete these exercises by define own functions for them. Try to write in English in this lab, use dictionary as needed

1. Suppose that username is “tploc” and password is “loctp”. Allow user to input a username and password and check whether it is a correct account.
2. Write a program to register a Facebook account. An user enters first name, last name, email (twice), date of birth and password (twice). Check whether he/she entered valid info and print out “SUCCESSFUL REGISTRATION” or show the invalid field that he/she should modify. Valid info:

- Emails contain '@'
 - 2 emails are the same
 - Password has digits, letters
 - 2 passwords are the same
 - DOB is valid
3. Suppose that your secret string is “yolo”. Allow user enter a list of string, stop the process if user enters the correct secret string or when he/she enters “give up”.
How many strings did he/she enter?
 4. Write a program allowing user to enter a list of students info (id, full name, id, full name...). Generate the email account. For example, if full name is HO Tuan Thanh, the email account is htthanh@apcs.vn.
 5. A paragraph is a collections of sentences. A sentence contains a number of words. Two words are separated by a blank. Write a console application that allows user to input a paragraph and answer the following question.
 - a. Normalize the paragraph: the first character of a sentence should be capitalize.
 - b. How many sentences are there in the paragraph?
 - c. How many words are there in the paragraph?

4 In-class Assignment (IA)

1, 3, 4

5 Homework (HW)

All