

CSC 150 LAB 1-1 STRINGS AND LOOPS

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1. INPUT OF STRINGS USING THE EXTRACTION OPERATOR

Create a Visual Studio Project for the following program. This program asks the user to enter a string on a line, and reads the string.

```
#include <iostream>
#include <string>
using namespace std;

int main()
{
    string str;
    cout << "Enter a string: ";
    cin >> str;

    cout << "You entered the string: " << str;
    cout << "\n";
    return 0;
}
```

Experiment with this program as follows:

- (1) Run the program and enter just your first name when prompted.

A sample run should look like this:

```
Enter a string: Godfrey
You entered the string: Godfrey
Press any key to continue . . .
```

- (2) Next, Run the program and enter your full name, with the components of your names separated by white space (blanks). Here is a sample run:

```
Enter a string: Godfrey Muganda
You entered the string: Godfrey
Press any key to continue . . .
```

Notice that when you read string using the extraction operator >>, the computer stops reading at the first white space character.

2. INPUT OF STRINGS USING `getline`

In the `<string>` library, there is a function called `getline` that can be used to read an entire line. This function will read strings that contain whitespace characters and it only stops at the end of the line (unless told otherwise).

Modify your program to read the input string using the `getline` function by replacing

```
cin >> str;
```

with

```
getline(cin, str);
```

Your program should now look like this

```
#include <iostream>
#include <string>
using namespace std;

int main()
{
    string str;
    cout << "Enter a string: ";
    //cin >> str;
    //Replace string read with getline
    getline(cin, str);

    cout << "You entered the string: " << str;
    cout << "\n";
    return 0;
}
```

Repeat the two experiments, steps (1) and (2) from section 1. You should notice a difference in the output for step (2).

3. THE LENGTH OF A STRING

Each string object has a function called `length()` that returns the number of characters in the string. You call the `length` function on a string `str` by using the expression

```
str.length()
```

For example, the statement

```
cout << str.length();
```

will print on the screen the number of characters in the string `str`.

Modify your program so that when you run it, you will see output that looks like this:

```
Enter a string: Godfrey Muganda
You entered the string: Godfrey Muganda
The string has 15 characters.
```

Press any key to continue . . .

4. ACCESSING THE CHARACTERS IN A STRING

A string object is a sequence of characters. The first character is at position 0 in the string, the second character is at position 1, and so on.

The position of a character within a string is also called the *index* of that character. (Think of how an index at the end of a book tells you where (on which page) to find a word in the book).

Every string object has a function called `at` that returns the character at a given index.

For example, `str.at(0)` returns the character at index 0, and `str.at(3)` returns the character at index 3.

In general, for any nonnegative integer `k` that is less than the length of the string, `str.at(k)` will return the character at position `k`.

Add code to your program so that the program prints every character in the string in reverse order, beginning with the last character and ending with the first. You will need to use a loop.

When you run your program, the output should look like this:

```
Enter a string: United States of America
You entered the string: United States of America
The string has 24 characters.
```

```
The string in reversed order is: aciremA fo setatS detinU
Press any key to continue . . .
```

Lastly, we want to add code to the program so that it prints all characters of the string that are in even positions, and then prints all characters of the string that are in odd positions.

When you run the program, the output should look like this.

```
Enter a string: North Central College
You entered the string: North Central College
The string has 21 characters.
```

```
The string in reversed order is: egelloC lartneC htroN
The characters in even positions are: NrhCnrlClee
The characters in odd positions are: ot eta olg
Press any key to continue . . .
```

Locate the source file for your program, attach it to an email, and submit via email with subject

Submitting CSC 150 Lab 1-1

The deadline for submission is Friday night at midnight.