String(s) and Char(s)

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Strings

- String is a class build into the C++ library.
- It is there to place the original “cstrings” concept first developed for C.
- String has predefined functions contained within the class which we can use for our convenience to do string manipulations.

Declaring a String

- Model:

    string variable_name;

- string firstname = "Tyler";
- string lastname = "Tseng";

Reading Into a String

Reading a word into a string

- To read in a person's first name, we can do the following:

```
string firstname;
cout << "Enter your first name: ";
cin >> firstname;
cout << "Your are " << firstname;
```

- You might note using cin like this only reads in one word at a time. Cin will read to the next whitespace.

Reading a line into a string

- To read in a person's full name, we can do the following:

```
string fullname;
cout << "Enter your full name: ";
getline( cin, fullname );
cout << "Your are " << fullname;
```

- Getline function will read in all the characters entered until it hits the newline character

String as Char array

Parts of the string

- We can think of string as an array of characters
- So a string defined as the follows…

  string name = "Tyler";
- Could be thought of as…

0	1	2	3	4
T	y	l	e	r

- Where…
- name[0]='T'; name[1]='y';

Replacing parts of the string

- Following the previous example, if we had the following code…

```
name[1] = 'i';
name[2] = 'g';
```

- This would turn Tyler Tiger

String Manipulation

Identify the length of a string

- To identify the length of the string, we can use one of the following string class methods:

```
string str = "today is my birthday";
cout << "length: " << str.length();
//or
cout << "length: " << str.size();
```

Concatenate two strings together

- To concatenate two strings together, we can do the following:

```
string s1 = "Hello ";
string s2 = "World";
string s3 = s1 + s2;
cout << s3 << endl;
```

- Programs design with multi-lingual specifications uses a language file to hold all the text. Text is load into a variable, and the variable is cout to the screen.

Inserting a into a string

- The string library also allows us to insert some text into part of the string. We can use the insert function to do this.
- Model:
  - string_variable.insert(index_position, text_to_insert);
    - string_variable: a variable declared as a string type
    - insert: the insert function
    - index_position: the position you want the text to go this would push all other text back
    - text_to_insert: the text you want to insert in to this string

Inserting a into string (Example)

- To insert a string into another, we can do the following:

```
string str = "NY";
str.insert( 1, "ew " );

//insert into the end
str.insert( str.size(), "ork"  );

//note the location is 5
cout << str << endl;
```

Comparison on strings

- Comparison on the strings are done on individual character's code known as the ASCII code.
- Following comparisons operator are defined:

==	!=
true if str1 == str2	true if str1 != str2
>	>=
true if str1 > str2	true if str1 >= str2
<	<=
true if str1 > str2	true if str1 <= str2

- Because the above operators are defined, we can sort strings in C++ as we can sort numbers.