

More Strings

CS303E: Elements of Computers
and Programming
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Iterating Over a String: Take Two (Again)

- Again, strings are sequences of characters

h	e	l	l	o
---	---	---	---	---

- So we can iterate...

Example:

```
myString="hello"
for ch in myString:
    print ch
```

Output:

```
h
e
l
l
o
```

The Empty String

- The empty string is a string that contains *nothing*
 - Represented by two quotation marks (or two single quotes) back-to-back

```
""
''
```
- Often used in programming for initialization of strings

String Slicing

String *slicing* creates a new string that consists of a substring of the original string

```
<stringName>[start:end]
```

Results in a substring of `stringName` that begins with the character at index `start` and ends with the character at index `end-1`.

	String Slicing
	<p>You can also omit start and/or end:</p> <ul style="list-style-type: none"> - If start is omitted, begin at index 0 - If end is omitted, end is equal to <code>len(stringName)</code> <p>What if you omit both?</p>

	Example
	<p>Given a string variable <code>myString</code> that has already been initialized, assign the variable part to contain a string consisting of the first five characters of <code>myString</code></p>

	iClicker Question
	<p>What is the value of <code>s</code> after the following expression is evaluated?</p> <pre>myString="Mary went to school" s=myString[0:4]+myString[-6:]</pre> <p>A. Maryschool C. Error B. Mary school</p>

	Other Operations: The String Library
	<ul style="list-style-type: none"> ■ The string library contains many pre-defined functions that you can use to find out information on a string ■ To use the string library, import it and call using "string": <pre>import string string.find(...) #find is a function</pre>

How to Use String Library Functions

Each one *returns* a value

- You can think of that value as substituting for the function call
- Use the function as you would use the value
- You’ve seen this before!
 - `range()` returns a list
 - `float()` returns a float ...

Sample String Library Functions

Function	Purpose
<code>capitalize(s)</code>	Returns copy of s with the first character capitalized
<code>capwords(s)</code>	Returns copy of s with first character of each word capitalized
<code>center(s, w)</code>	Returns copy of s centered in field of width w
<code>count(s, str)</code>	Returns number of occurrences of str in s
<code>find(s, str)</code>	Returns index of first occurrence of str in s
<code>lower(s)</code>	Returns copy of s in all lowercase letters
<code>upper(s)</code>	Returns copy of s in all uppercase letters
<code>split(s)</code>	Split s into a list of substrings (splits at blank spaces)
<code>strip(s)</code>	Returns a copy of s with leading and trailing whitespace characters removed

String Library Functions: Example

```
s=raw_input("Please enter a string:")

print "string in lower case is: " +
      string.lower(s)
print "string in upper case is: " +
      string.upper(s)
print "string with words capitalized
is: " + string.capwords(s)
```

iClicker Question

The string library functions are called like this:

`string.<functionName>(<args>)`

What does "string" signify?

- A. The argument is a string
- B. The function is in the string library
- C. The return value is a string

	Exercise
	Write a program that reads two strings from the keyboard and indicates whether or not the second string is a substring of the first when case is disregarded. Use a function to determine whether the substring exists and perform the output.

	Group Exercise
	Write a program that reads a word from the keyboard. If the word is not of length 3, print a message indicating the word must be of length 3. Otherwise, determine if the word is a palindrome (i.e., a word that reads the same left to right and right to left).