- What if we added song length to our file?

file contents

Harlem Shake   ←   Title
Baauer   ←   Artist
2:40   ←   Length
Thrift Shop
Macklemore & Ryan Lewis
3:19
When I Was Your Man
Bruno Mars
3:45

Strings are built from characters

The string "Computer" is represented internally like this:

"C"	"o"	"m"	"p"	"u"	"t"	"e"	"r"

- Each piece of a string is called a **character**.

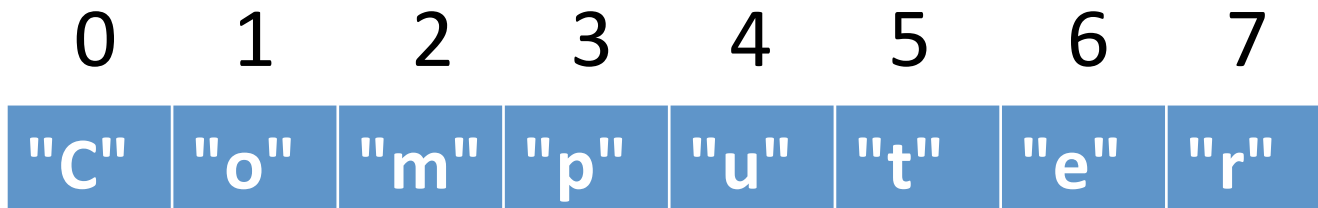- A character is a special kind of string that is made up of exactly one letter, number, or symbol.

Accessing characters

Each character in a string is numbered by its position:

0	1	2	3	4	5	6	7
"C"	"o"	"m"	"p"	"u"	"t"	"e"	"r"

The numbers above the characters are called *indices* (singular: *index*) or *positions*.

Accessing characters

0	1	2	3	4	5	6	7
"C"	"o"	"m"	"p"	"u"	"t"	"e"	"r"

- There is a separate variable for each character in the string, which is the string variable followed by [ ] with an integer in the middle.

```
my_string = "Computer"
print(my_string[0])    # prints C
print(my_string[7])    # prints r
```

Accessing characters

0	1	2	3	4	5	6	7
"C"	"o"	"m"	"p"	"u"	"t"	"e"	"r"

- These individual variables can be used just like regular variables, *except*

- you cannot assign to them.

```
my_string = "Computer"
my_string[0] = "B"   # illegal!
```

Another Example

```
name = input("What is your name? ")
initial = name[0]
print("The first initial of your name
is", initial)
```

Sample output

```
What is your name? Phil
The first initial of your name is P
```

Getting the length of a string

- Assume s is a string variable
- `len(s)` returns the length of s
- `len("Computer") returns 8`
- `len("A B C") return 5`
- `len("") returns 0`
- `len` is a "normal" return function, meaning if you want to capture the length, you should save it in a variable.
  - length_of_string = len(string_variable)

Loops over strings

- Accessing characters via numbers naturally leads to using loops to process strings:

```
# assume s is a string variable
for pos in range(0, len(s)):
    # do something with s[pos]
```

Try this

- Write a loop to count the number of capital letter A's in a string.

- Write a loop to count capital or lowercase A's.