

Intro to Computer Science

Local Laboratory

*** Udacity – Intro to Computer Science**

Strings

' I am string '

" I prefer double quotes! "

" I'm happy I started with a double quote! "

Strings

code

```
print( 'Hello' )  
print( "Hello" )  
print( Hello )
```

result

```
Hello  
Hello
```

```
Traceback (most recent call last):  
  File "/Users/lastland/PycharmProjects/cs101/test.py", line 1, in <module>  
    print(Hello)  
NameError: name 'Hello' is not defined
```

Strings

code

```
print( 'Hello' )  
print( "Hello" )  
Hello = "Howdy"  
print( Hello )
```

result

```
Hello  
Hello  
Howdy
```

Quiz: Valid String

아래 중 파이썬에서 유효한 문자열들을 고르시오.

☐ "Ada"

☐ "Ada

☐ 'Ada"

☐ Ada

☐ "Ada

☐ ""Ada'

Quiz: Hello!

`name`이라는 변수를 정의하고, 이 변수에 자신의 이름을 문자열로 할당하시오.

code

```
name = 'Dave'  
print('Hello ' + name + '!')
```

result

```
Hello Dave!
```

`<string> + <string>` -> concatenation of the two strings

Strings and Numbers

code

```
name = 'Dave'  
print( 'Hello ' + name + '!' + '!' + '!' )  
print( 'My name is ' + 9 )
```

result

```
Hello Dave!!!
```

```
Traceback (most recent call last):
```

```
File "/Users/lastland/PycharmProjects/cs101/test.py", line 1, in <module>
```

```
    print('My name is' + 9)
```

```
TypeError: must be str, not int
```

Strings and Numbers

code

```
name = 'Dave'  
print( 'Hello ' + name + '!' + '!' + '!' )  
print( '!' * 12 )
```

result

```
Hello Dave!!!  
!!!!!!!!!!!!!!
```


Indexing Strings

<string> [<expression>]

'udacity'[0] → 'u'

index : 0 1 2 3 4 5 6

'udacity'[1+1] → 'a'

name = 'Dave'

name[0] → 'D'

code

```
name = 'Dave'  
print( name[0] )
```

result

D

Indexing Strings

<string> [<expression>]

'udacity'[0] → 'u'
0 1 2 3 4 5 6

'udacity'[1+1] → 'a'

name = 'Dave'
name[0] → 'D'

code

```
name = 'Dave'  
print( name[3] )
```

result

e

Indexing Strings

<string> [<expression>]

'udacity'[0] → 'u'
0 1 2 3 4 5 6

'udacity'[1+1] → 'a'

name = 'Dave'
name[0] → 'D'

code

```
name = 'Dave'  
print( name[4] )
```

result

```
Traceback (most recent call last):  
File "/Users/lastland/PycharmProjects/cs101/test.py", line 3, in <module>  
    print(name[4])  
IndexError: string index out of range
```

Indexing Strings

<string> [<expression>]

'udacity'[0] → 'u'
0 1 2 3 4 5 6

'udacity'[1+1] → 'a'

name = 'Dave'
name[0] → 'D'

code

```
name = 'Dave'  
print( name[-1] )
```

result

e

Indexing Strings

<string> [<expression>]

'udacity'[0] → 'u'
0 1 2 3 4 5 6

'udacity'[1+1] → 'a'

name = 'Dave'
name[0] → 'D'

code

```
name = 'Dave'  
print( name[-2] )
```

result

v

Quiz: Same Value

주어진 변수

`s = '<any string>'`

다음의 두 쌍들 중에서 서로 완전히 같은 값을 가지는 쌍을 모두 고르시오.

☐ `s[3]`, `s[1 + 1 + 1]`

☐ `s[0]`, `(s + s)[0]`

☐ `s[0] + s[1]`, `s[0 + 1]`

☐ `s[1]`, `(s + 'ity')[1]`

☐ `s[-1]`, `(s + s)[-1]`

Selecting Sub Sequences

```
<string>[<expression>] -> one-character  
                        Number          string
```

start **stop**

<string> [**<expression>** : **<expression>**]

s **Number** **Number**

-> **start** 위치에서 시작하여,
stop-1 위치에서 끝나는 string 변수 **s** 의
부분집합을 가지는 string 타입의 값

Selecting Sub Sequences

code

```
word = 'assume'  
print( word[3] )  
print( word[3:4])
```

result

```
u  
u
```


Selecting Sub Sequences

code

```
word = 'assume'  
print( word[3] )  
print( word[4:6])
```

result

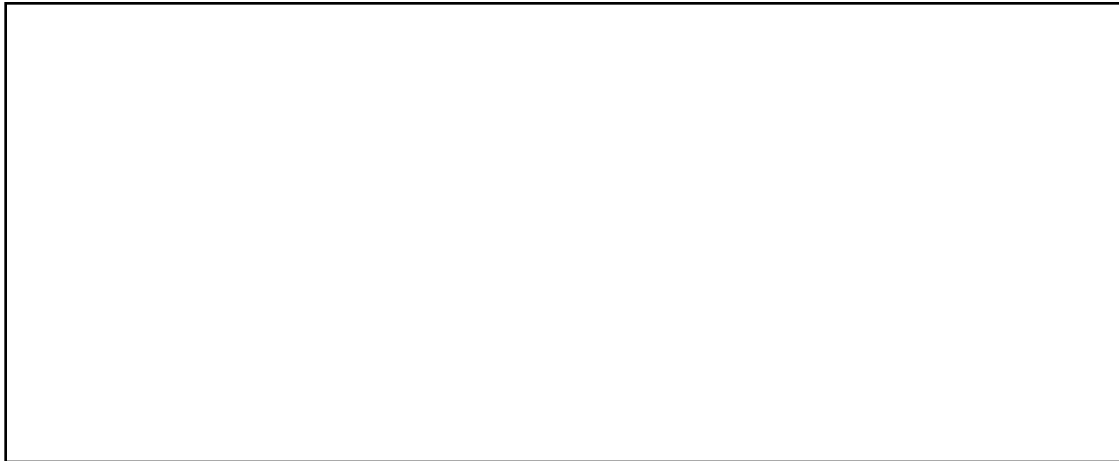
```
u  
me
```

Selecting Sub Sequences

code

```
word = 'assume'  
print( word[3:3] )
```

result

A large, empty rectangular box with a black border, intended for displaying the output of the Python code above it.

Selecting Sub Sequences

code

```
word = 'assume'  
print( word[3] )  
print( word[4:6] )  
print( word[4:] )  
print( word[:2] )  
print( word[:] )
```

result

```
u  
me  
me  
as  
assume
```

Quiz: Capital Udacity

다음 변수를 이용하여 **Udacity**(대문자 **U**)를 출력하는 파이썬 코드를 작성하시오.

```
s = 'audacity'
```

code

```
s = 'audacity'  
print( 'U' + s[2:] )
```

result

```
Udacity
```

Quiz: Understanding Selection

어떤 문자열 s 에 대하여
 $s = \text{'<any string>'}$

아래의 보기 중 s 와 언제나 동일한 것들을 고르시오.

☐ $s[:]$

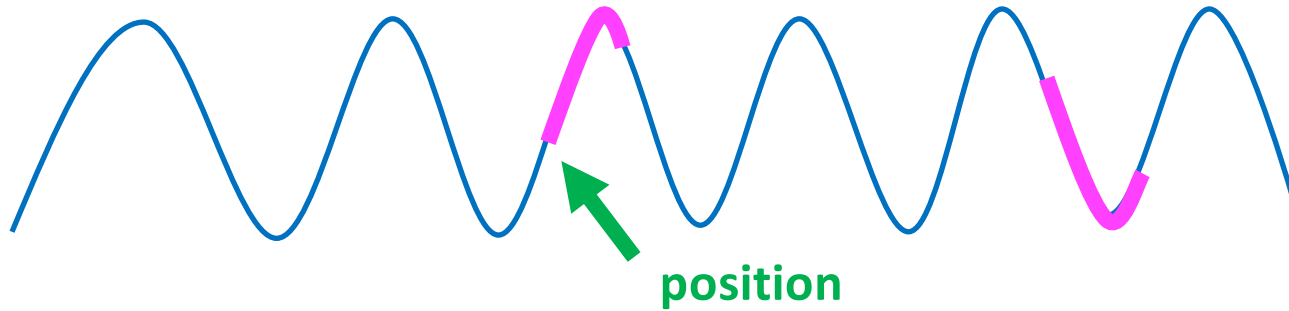
☐ $s + s[0:-1+1]$

☐ $s[0:]$

☐ $s[:-1]$

☐ $s[:3] + s[3:]$

Finding Strings in Strings



`<string>.find(<string>)`

→ 타겟 문자열(target string)
이 검색 문자열(search string)에서
처번째로 나타나는 위치(position)
를 숫자 타입으로 반환

만약 타겟
문자열(target string)
검색되지 않으면,
-1 을 반환

Finding Strings in Strings

code

```
pythagoras = 'There is geometry in the humming of the strings, there is music in the spacing of  
the spheres.'  
print( pythagoras.find( 'string' ) )  
print( pythagoras[40:] )  
print( pythagoras.find( 'T' ) )  
print( pythagoras.find( 'sphere' ) )  
print( pythagoras[86:] )  
print( pythagoras.find( 'algebra' ) )
```

result

```
40  
strings, there is music in the spacing of the spheres.  
0  
86  
spheres.  
-1
```

Quiz: Testing

다음에서 결과값이 **-1**이 되는 것을 모두 고르시오.

- ☐ 'test'.find('t')
- ☐ "test".find('st')
- ☐ "Test".find('te')
- ☐ 'west'.find('test')

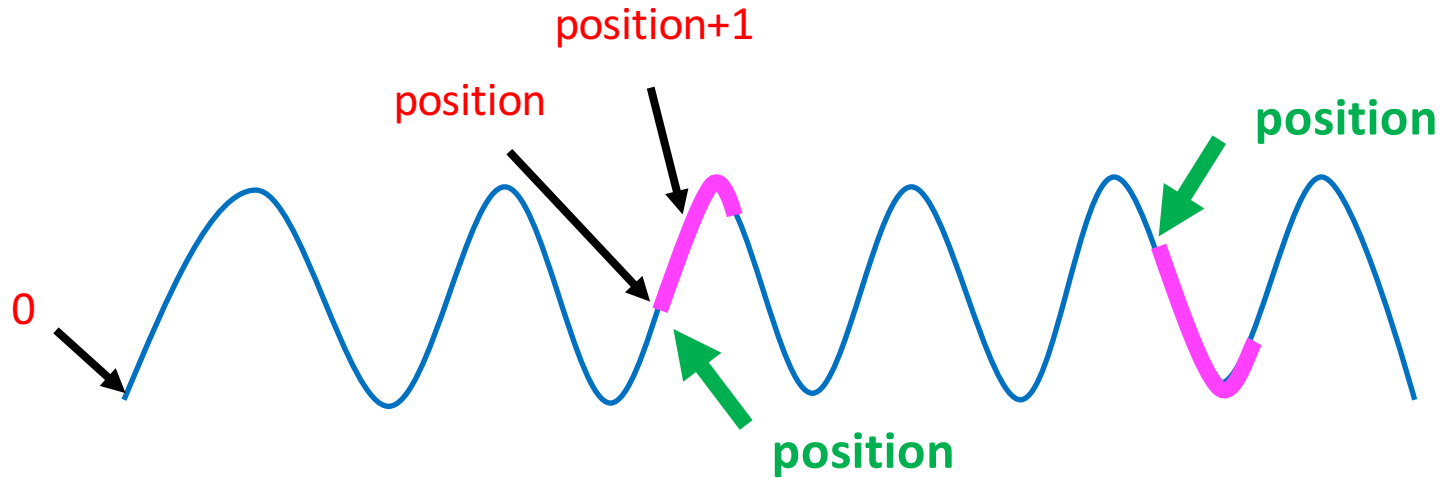
Quiz: Testing 2

어떤 문자열 `s`에 대하여
`s = '<any string>'`

아래의 보기 중 항상 `0`의 값을 가지는 것을 모두 고르시오.

- ☐ `s.find(s)`
- ☐ `s.find('s')`
- ☐ `'s'.find('s')`
- ☐ `s.find(“ ”)`
- ☐ `s.find(s + '!!!') + 1`

Finding with Numbers



`<string>.find(<string>) <number>)`

→ 타겟 문자열(target string)
이 검색 문자열(search string)에서
첫번째로 나타나는 위치(position)
를 숫자 타입으로 반환
(<number> 값의 위치 또는 그 이후부터)

만약 타겟
문자열(target string)
검색되지 않으면,
-1 을 반환

Finding with Numbers

code

```
danton = "De l'audace, encore de l'audace, toujours de l'audace."  
print( danton.find( 'audace' ) )  
print( danton.find( 'audace', 0 ) )  
print( danton.find( 'audace', 5 ) )  
print( danton.find( 'audace', 6 ) )  
print( danton[6:] )  
print( danton[25: ] )
```

result

```
5  
5  
5  
25  
udace, encore de l'audace, toujours de l'audace.  
audace, toujours de l'audace.
```

Finding with Numbers

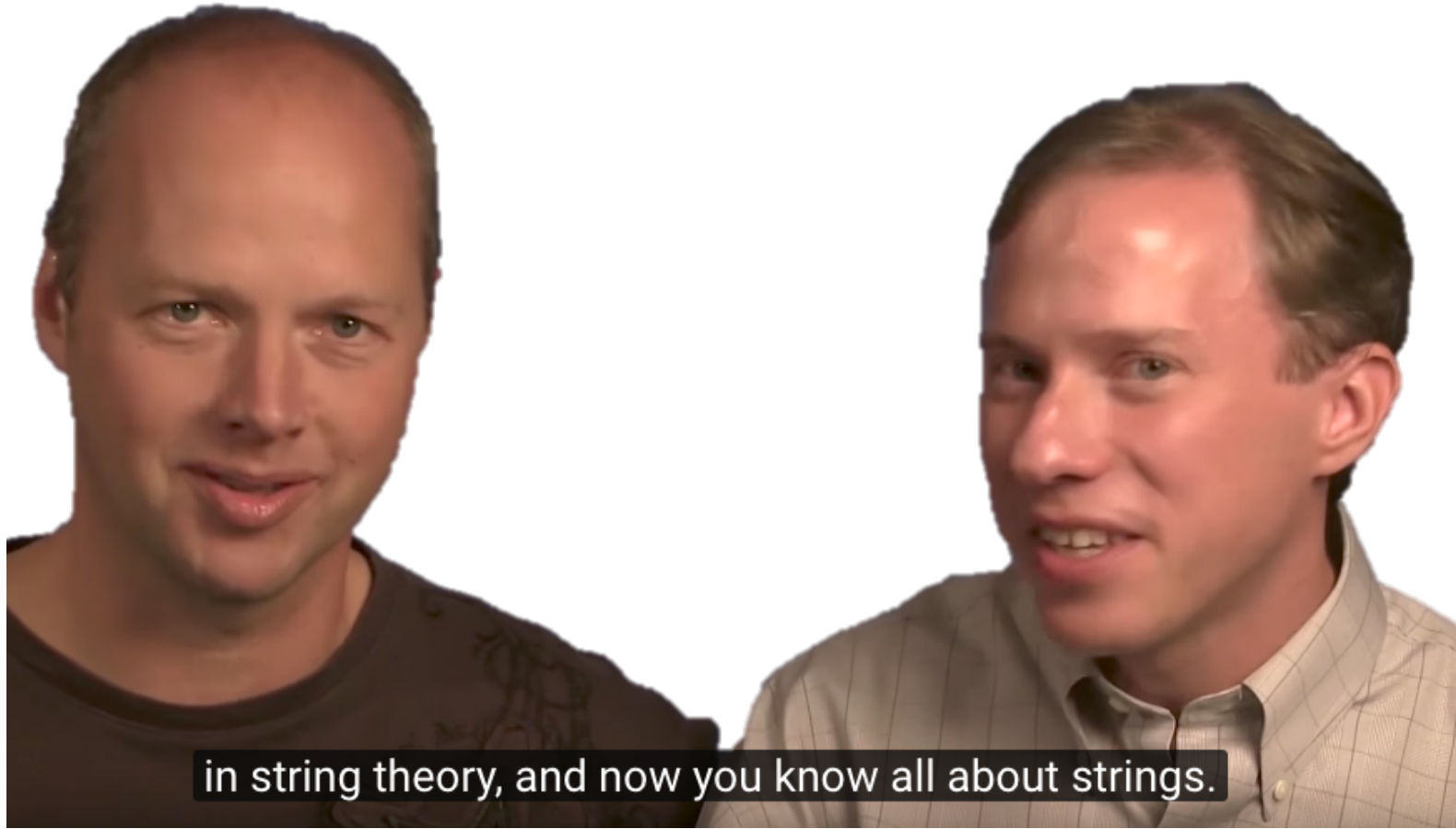
code

```
danton = "De l'audace, encore de l'audace, toujours de l'audace."  
print( danton.find( 'audace', 25 ))  
print( danton.find( 'audace', 26 ))  
print( danton[47:] )  
print( danton.find( 'audace', 48 ))
```

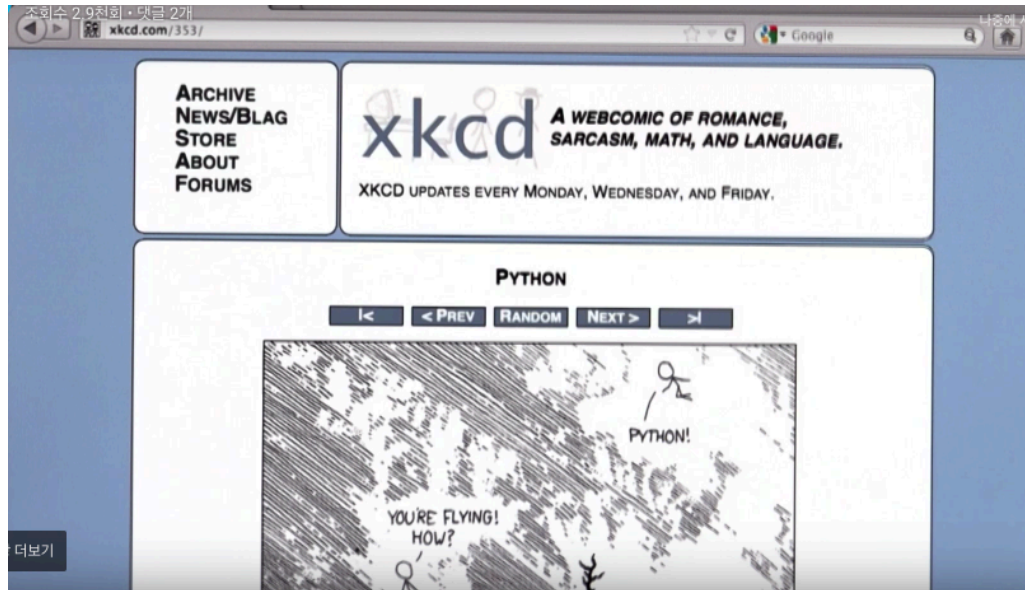
result

```
25  
47  
audance.  
-1
```

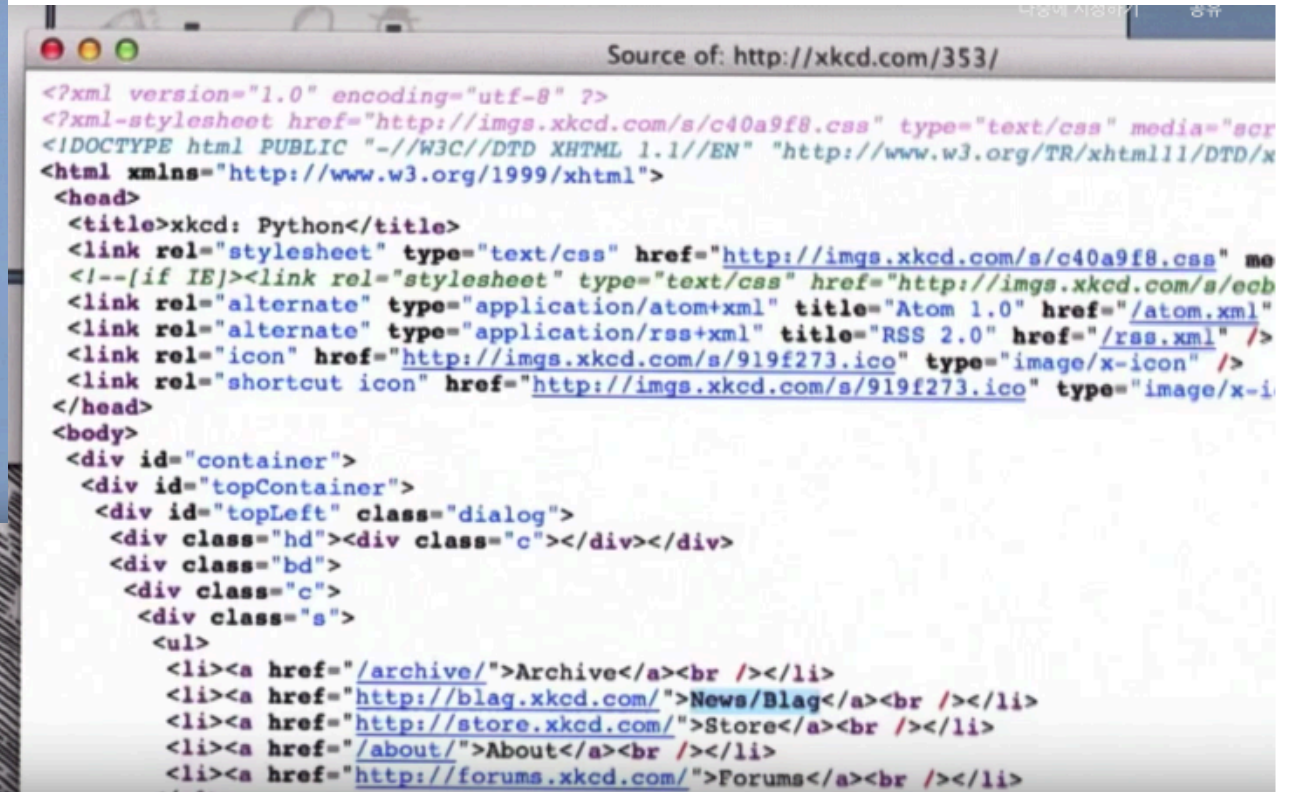
String Theory



Extracting Links



<https://www.xkcd.com/353/>



Extracting Links

... <a href = "<url>"> ...

page = web page의 소스코드의
string 값

Quiz: Extracting Links

`page` 변수 내용 중 첫번째 '`<a href=`'의 위치값을 `start_link` 변수에 정의하는 파이썬 코드를 작성하시오.

code

```
page = "<div id='top_bin'> <div id='top_content' class='width960'>  
    <div class='udacity float-left'> <a href='/'>"  
  
start_link =
```


Quiz: Final Quiz

`page` 문자열에서 link 태그에 속한 첫번째 URL의 값을
`url` 변수에 할당하는 파이썬 코드를 작성하시오.

```
page = contents of a web page  
start_link = page.find( '<a href=' )
```

```
print( url ) -> http://udacity.com
```

... `<a href =` `"<url>"` `>` ...

↑ start_link ↑ ↑

Quiz: Final Quiz

`page` 문자열에서 link 태그에 속한 첫번째 URL의 값을
`url` 변수에 할당하는 파이썬 코드를 작성하시오.

`print(url)` -> `http://udacity.com`

code

```
page = "<div id='top_bin'> <div id='top_content' class='width960'>  
    <div class='udacity float-left'> <a href='http://udacity.com'>"  
  
start_link = page.find('<a href=')  
start_quote = page.find("'", start_link)  
end_quote = page.find("'", start_quote+1)  
url = page[start_quote+1:end_quote]  
  
print( url )
```

Great Job!

