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!

name이라는 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!!!
!!!!!!!!!!!!
```

Strings and Numbers

code

```
name = ‘Dave’
print( ‘Hello ’ + name + ‘!’ + ‘!’ + ‘!’ )
print( ‘Hello ’ + name + ‘!’ * 3 )
```

result

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

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[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 string
Number

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

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

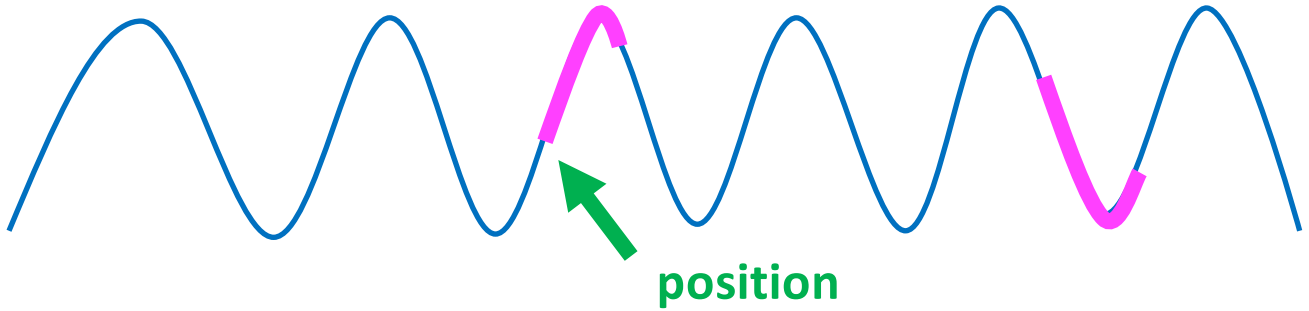
어떤 문자열 s에 대하여

s = '<any string>'

아래의 보기 중 s와 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>)

→ **number that gives first position** in **search string** where the **target string** appears

if target string is not found,

-1

Finding Strings in Strings

code

```
pythagoras = 'There is gemetry 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 -1이 되는 것을 모두 고르시오.

- ❑ ‘test’.find(‘t’)
- ❑ “test”.find(‘st’)
- ❑ “Test”.find(‘te’)
- ❑ ‘west’.find(‘test’)

Quiz: Testing 2

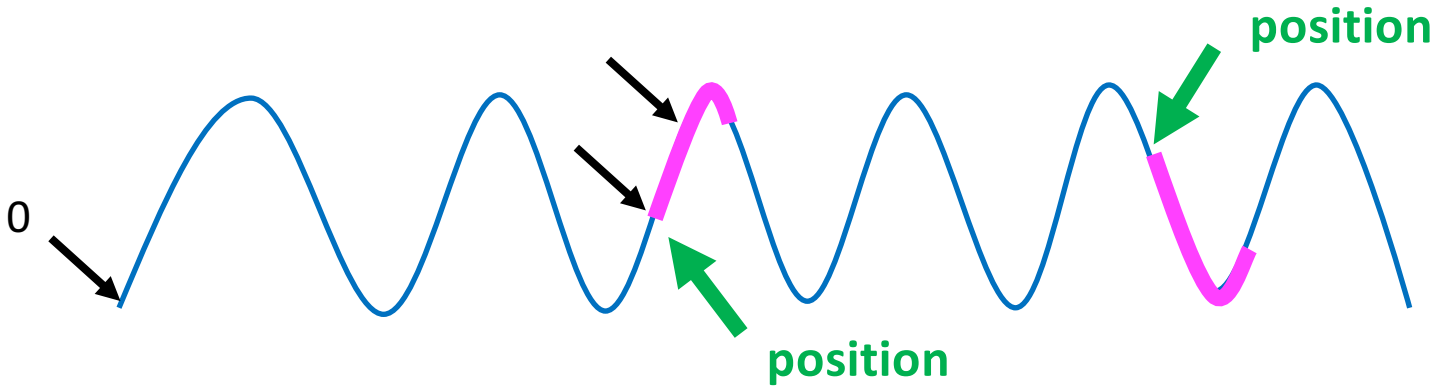
어떤 문자열 s에 대하여

s = ‘<any string>’

아래의 보기 중 항상 0의 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>)

→ **number that gives first position** in **search string** where the **target string** appears
(at or after <number>)

if target string is not found,

-1

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
```

Quiz: Finding with Numbers Quiz

문자열을 값으로 가지는 변수 s와 t와 숫자를 값으로 가지는 i에 대해서

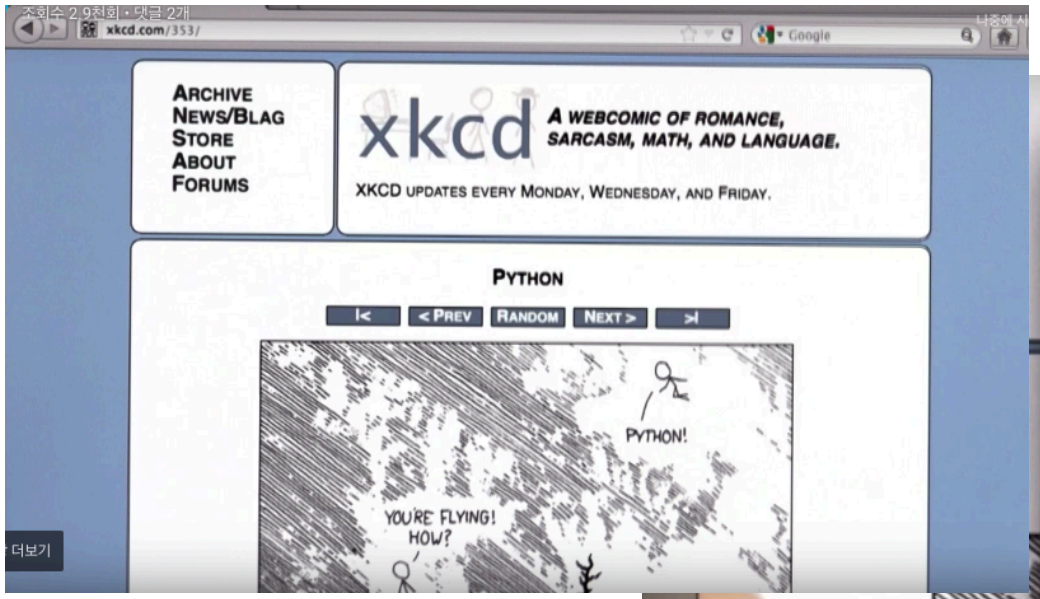
s = '<any string>'
t = '<any string>'
i = <any number>

아래의 보기 중 s.find(t, i)와 동일한 것을 모두 고르시오.

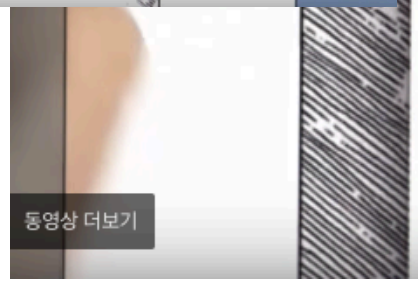
- ❑ s[i:].find(t)
- ❑ s[i:].find(t[i:])
- ❑ s.find(t)[:i]
- ❑ s[i:].find(t) + i

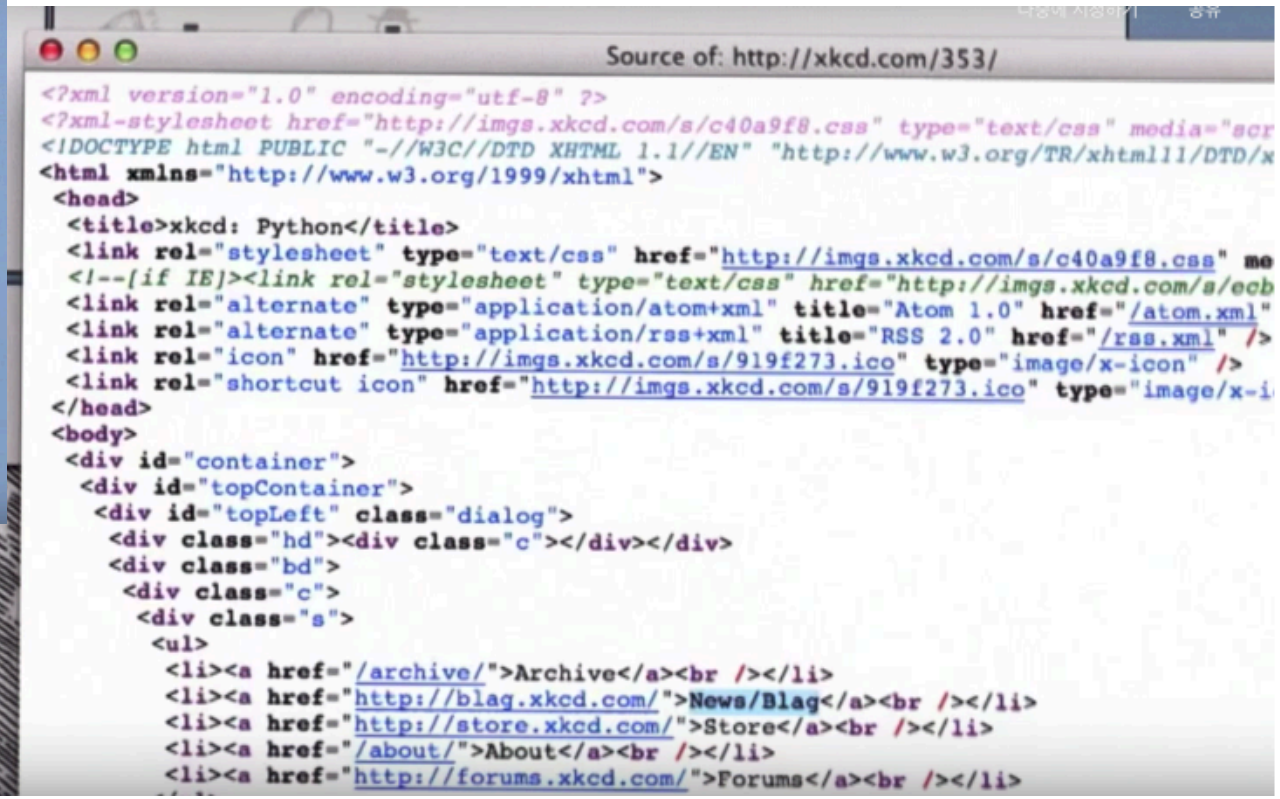
String Theory

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.

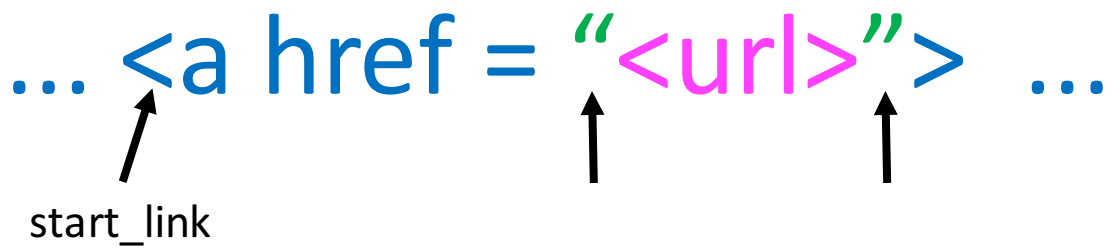
code

```
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
```



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!