

As you walk in

Quiz will start at the beginning of lecture

- Have pencil/pen ready
- Don't use your own scratch paper
 - We have some if you need it
- Silence phones



Quiz

Before we start

- Don't open until we start
- Make sure your name and Andrew ID are on the front
- Read instruction page
- No questions (unless clarification on English)

Additional info

- 25 min



15-112
Lecture 2

Week 2 Tue
Strings

Instructor: Pat Virtue

Post-quiz Exercise

What is the correct response to the following?

```
pet = "manatee"  
s = pet[:4]*2
```

"mana"*2

"manamana"

Then Google search: s

response = "doo"*2 + "do"*3

Announcements

Assignments

Week 4 Pre-reading Checkpoint

- Pre-reading out today
- Checkpoint out Wed
- Due Fri 9/16, 8 pm

HW3

- Out this evening
- Due Saturday 9/17, 8 pm
- Points will be deducted for style going forward

Quiz

Week 3 material

- Tue 9/20, in lecture

Announcements

CMU Course Add Deadline

- Today

15-112 → 15-110



- Friday

Participation scores from polls

- Week 1, just practice, doesn't count
- Week 2 totals will be up on Autolab tonight (won't include today)
- Piazza post coming with more details
- Don't panic!

Strings

Poll 1

What does this print?

A. A

B. B

C. C

D. D

E. E

F. F

G. G

H. None of the above

```
def ct(s):  
    n = ord(s)  
    n += 2  
    return chr(n)
```

```
print(ct('C'))
```


Poll 2

Which is better?

A)

```
# Given string s
for i in range(len(s)):
    # Do stuff
```

B)

```
# Given string s
for c in s:
    # Do stuff
```

Poll 3

What does this code print?

- A. abcde
- B. edcba
- C. bcdea
- D. bcda
- E. ba
- F. ab
- G. (Python crashes)
- H. I have no idea

```
def ct(s):  
    return s[1:-1] + s[0]
```

start (pointing to 1) *end* (pointing to -1)

bed (under s[1:-1]) *a* (under s[0])

```
print(ct('abcde'))  
n = len(s)
```

0	1	2	3	4
'a'	'b'	'c'	'd'	'e'
$n-1$	$n-2$	$n-3$	$n-4$	$n-5$
-1	-2	-3	-4	-5

(Note: A yellow box highlights 'b', 'c', 'd' in the string and a yellow arrow points to the -1 index in the bottom row.)

String indexing and slicing

Indexing

`c = s[index]` # c will be character at position index

Valid indices

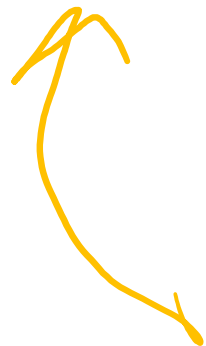
- Positive: 0 to $\text{len}(s)-1$ (but not $\text{len}(s)$)
- Negative: $-\text{len}(s)$ to -1

Slicing

`s[start:end:step]`

Similar to range arguments

- Doesn't include end
- There are default values if any of these are left blank
- (Gets a bit goofy with a negative step)



Poll 4

What does this function do?

- A. Return a copy of s
- B. Return the reverse of s
- C. Return string that is only the last character of s
- D. Return string that is only the first character of s
- E. Return None
- F. (Python crashes)
- G. I have no idea

```
revStr(s)  
def mystery(s):  
    return s[::-1]
```

Example: isPalindrome(s)

0 1 2 3 4

s = a b c b a

n

i = 0

s[0] == s[4]

4 = n - 1 - i

s[1] == s[3]

✓ s[2]

s[3] == s[1]
s[4] == s[0]

Poll 5

What does this print?

- A. dog
- B. DOG
- C. mog
- D. MOG
- E. mOG
- F. (Python crashes)
- G. I have no idea

H. Supdog

```
s = 'dog'  
→ s.upper()  
→ s[0] = 'm'  
print(s)
```

do nothing
crash

Strings are immutable

Once a string object is created, we can't change it.

This is what we call “immutable”

Actually, everything we have used so far is immutable: ints, floats, etc.
(they just aren't very interesting objects)

It might see as though you can change strings but we can't. It always ends up as some new string object.

This will be much more relevant once we get to our first mutable object type, lists!

Poll 6

What does this print?

A. lil

B. nasx

C. lilnasx

D. (Python crashes)

E. I have no idea

```
s = 'lil'  
t = s  
s += 'nasx'  
  
print(t)
```


Strings and aliases

Two variables are “aliases” are when they reference the exact same object.

This happens when you assign a variable to another variable:

```
s = 'abc'  
t = s
```

s and t are **aliases** referencing the same to the same exact string object 'abc'

But...strings are immutable. We can't possibly change s without making a new string.

```
s += 'def' # Assigns s to a new string 'abcdef'  
# The string t is referencing remains 'abc'
```

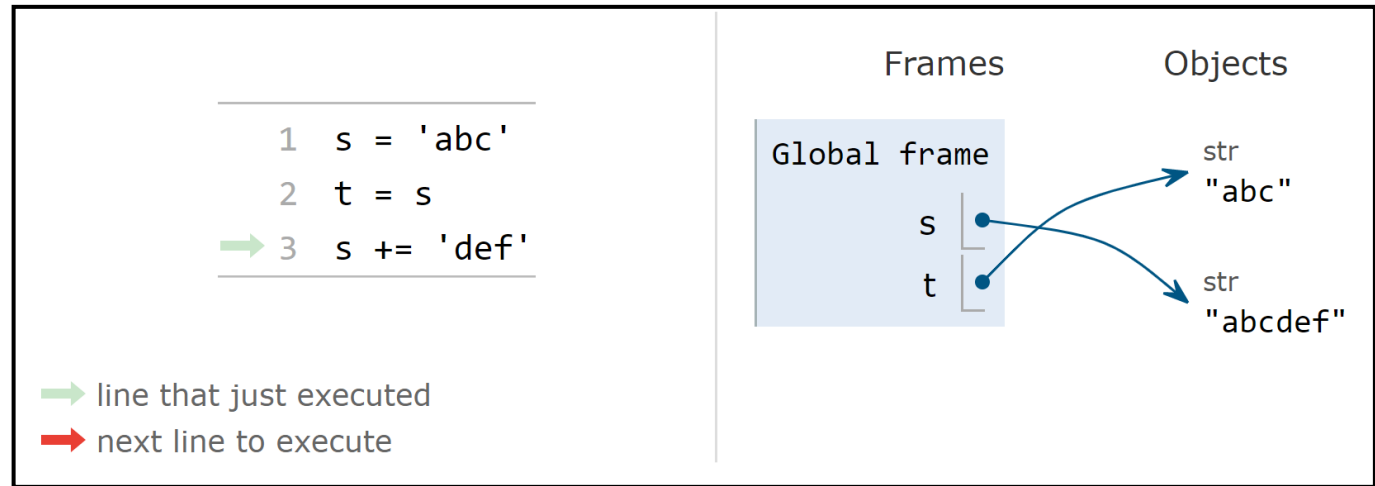
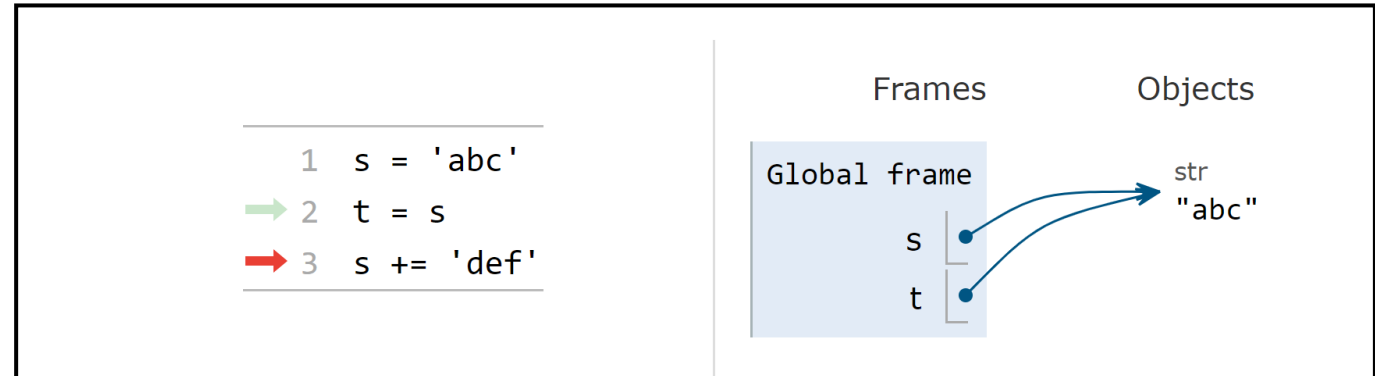
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But...strings are immutable.

We can't possibly change `s` without making a new string.



String methods

From notes:

s	isalnum	isalpha	isdigit	islower	isspace	isupper
ABCD	True	True	False	False	False	True
ABcd	True	True	False	False	False	False
abcd	True	True	False	True	False	False
ab12	True	False	False	True	False	False
1234	True	False	True	False	False	False
	False	False	False	False	True	False
AB?!	False	False	False	False	False	True