Administrivia

• Homework 2 is due Friday
  – Threw out question 51920
  – String comparison questions moved to later assignment
• Office hours!
• Homework 3 will be assigned Monday
REVIEW
s=""%"+"i"
i=3/6
x=float(s%i)*2

What is the value of x?
a) 0.0
b) "%i%i"
c) 1.0
d) "1.0"
e) None of the above.
s="TACO TUESDAY"[2:6]
t=int(3.7)
x=s[-1]+s[t-2]

What is the value of x?
a) “O ”
b) “UO”
c) “TC”
d) “TO”
s=“TACO TUESDAY”[2:6]
    0123456789...

s= CO TU

s=“CO T”

t=int(3.7)

t=3

x=s[-1]+s[t-2]

x=“T”+s[1]

x=“TO”
```python
i = len("TACO TUESDAY")
c = (1.0 + 2.0j) * (-i)
x = abs(min(c.real, -13))
```

What is the value of x?

a) 0  
b) 11  
c) 12  
d) 13
FUNCTIONS
Functions

• A small program we can run *within* Python
  – Saves us from having to rewrite code
  – Don’t reinvent the wheel!

**ANALOGY**: Functions are *verbs* in Python.

• Also called a *subroutine* or *procedure*
Function calls

• When we want to execute a function, we call it or invoke it
• Use name of the function with parentheses
  – Example: print()
• Many functions are part of the Python language
  – We call them built-in functions
User input

• `input()` is a built-in function
• Argument: string printed to user
• Return value: string user typed before hitting “ENTER”
Goal

• Purpose of a program is to *achieve a goal!*
• Let’s write a quadratic equation solver!
print("QUADRATIC SOLVER")
print("ax^2+bx+c=0")

a=float(input("a: "))
b=float(input("b: "))
c=float(input("c: "))

root=(b**2-4*a*c)**.5
denom=2*a
pos=(-b+root)/denom
neg=(-b-root)/denom

message1="%.2f + %.2fi" % (pos.real,pos.imag)
message2="%.2f + %.2fi" % (neg.real,neg.imag)

print("Solution 1: %s" % message1)
print("Solution 2: %s" % message2)
Methods

• Like attributes, **functions** can be stored inside the type, too.

• Use **attribute operator** on the value.

  “STOP SHOUTING!” .lower()

  \((1+1j) .conjugate()\)

Value is treated like an argument.
String methods

“GATTACA”.count(“A”)  
“MVEMJSUN”.find(“J”)  
“ABACAB”.replace(“AB”,”G”)  
“HAM””.strip()  
“clint barton”.title()  
“wEiRd”.swapcase()
s="TACO  TUESDAY"
x=s[0:s.find(" ")]].lower()
x=x.title().swapcase()

What is the value of x?
a) "tACO"
b) "tuesdaY"
c) "Taco  
 d) "TUESDAY"