SURPRISE QUIZ 1

1. Write the output of the following snippets of code in the boxes provided.

(a)

```
a = 4
b = 2
b = a + b
a = a + b

print(a == b)
```

False. At the end of the expression, b = 6 and a = 8. Trace through each line carefully and track the values.

(b)

```
a = 3

def foo(num):
  return num ** num

foo(a)
print(a)
```

3. This is a trick question. foo(a) is executed but that does not change the value of a. Hence a remains as 3.

(c)

```
def foo(num):
  if num < 2:
    return "foo"
  if num % 2 == 0:
    return bar(num - 1)
  else:
    return bar(num - 2)

def bar(num):
  if num < 2:
    return "bar"
  elif num % 2 == 0:
    return foo(num - 2)
  else:
    return foo(num - 1)

print(foo(2014))
```

bar. foo(2014) calls bar(2013), which calls foo(2012), which calls bar(2011), which calls foo(2010)… Recognize that the calls are alternating and the value decreases by one each time.

In the end, foo(2) calls bar(1) which returns the string "bar".

You will not be able to run this code on your computer because the maximum recursion depth of Python is 1000. Hence, solving by recognizing pattern is the only way out.

2. In measuring temperature, the two common units are degree Celsius and degree Fahrenheit. The formula for conversion is as follows:

$$T_{(°C)} = (T_{(°F)} - 32) \times 5/9$$

Write a function **`convert`** that executes the conversion of a given temperature value according to the conversion formula given above. The function accepts two parameters, a numerical temperature value and a string indicating the units of that value (Celsius or Fahrenheit), and converts the given temperature value into the other unit. Sample execution is shown below.

```
>>> convert(36.7, "Celsius")
98.06

>>> convert(12.6, "Celsius")
54.68

>>> convert(98.06, "Fahrenheit")
36.7

>>> convert(54.68, "Fahrenheit")
12.6
```

```
def convert(temp, unit):
  return ((9 / 5) * temp + 32) if unit == "Celsius" else
((temp - 32) * 5 / 9)

The code shown above is called a ternary operator, which can
be used to shorten if/else statements into a single line of
code. I believe you would have seen usage of that operator
in Mission 0. Writing it as if/else is totally fine too:

def convert(temp, unit):
  if unit == "Celsius":
    return (9 / 5) * temp + 32
  else:
    return (temp - 32) * 5 / 9
```