How do functions break up?

They stop calling each other!

Thank you Manav!
Source: https://twitter.com/catalinmpit/status/1442571813364568071?lang=en
Feedback on Practice Exam #2

• Very well done! 😊
  • Very few answers with repeated code

• Don’t forget header comment block and comments though!
In-Class Activity

• Our in-class activity #3 -> 1%
  • Write your answer to Q. _5_ on the provided sheet of paper
  • Write your lastname, firstname and student number on the provided sheet of paper
  • At the end of today’s class, hand in your sheet of paper in the appropriate pile:
    • Pile 1 -> if your lastname start with a letter that is between ‘A’ and ‘L’
      • Pile 1 is on your left-hand side of the classroom
    • Pile 2 -> if your lastname start with a letter that is between ‘M’ to letter ‘Z’
      • Pile 2 is on your right-hand side of the classroom
Part 1 - Theory and Understanding

Try to answer the questions 1st **without using your computer**, then confirm your answer using **Python IDLE shell**!
Question 0

- Fill in the blanks:

Some functions take **argument(s)** when you call them.

**Function**

Definition: Python code fragment that does **one specific task**.

A function has a **descriptive name**.

Some functions return a value.
### Strings and Lists

<table>
<thead>
<tr>
<th>Question</th>
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| 1. What would the variable `aSlice` contain once the following Python code fragment has executed? | city = "Cranbrook"  
aSlice = city[:5]  
A. "Cranbr"  
B. "Cranb"  
C. "" (empty string)  
D. An error message  
E. None of the above. |
| 2. What would the variable `found` contain once the following Python code fragment has executed? | city = "Cranbrook"  
found = city.find("k")  
A. 8  
B. -1  
C. 9  
D. An error message.  
E. None of the above. |
| 3. What does the following Python code fragment produce? | numbers = list(range(10))  
aSlice = numbers[:8:2]  
print(aSlice)  
A. [] (i.e., an empty list)  
B. [0, 2, 4, 6, 8]  
C. [0, 2, 4, 6]  
D. An error message  
E. None of the above |
| 4. What does the following Python code fragment produce? | grades = ['B', 'A', 'D']  
print(grade[3])  
A. ['B', 'A', 'D']  
B. ['B', 'A']  
C. [] (i.e., an empty list)  
D. An error message.  
E. None of the above. |
Question 5 - Are there functions in the real world?

1. Mom says to Louise “Please, can you go clean your bedroom?“
   - Specific task: Clean bedroom
   - Argument(s): None required
   - Returned value: None returned

2. Mom says to Louise “Here’s $5, please, can you go buy a bag of apples?“
   - Specific task: Buy a bag of apples
   - Argument(s): Mom gives $5 to Louise, so $5 is what Louise requires to perform the specific task of buying a bag of apples
   - Returned value: Louise returns a bag of apples (and perhaps some change 😊) to Mom
Question 5 - Are there functions in the real world?

3. Mom says to Louise “Please, can you find my cell phone?“
   • Specific task: Find Mon’s cell phone.
   • Argument(s): None required
   • Returned value: The found cell phone

4. Mom says to Louise “Please, can you put these bags on the kitchen counter?“
   • Specific task: Put bags on kitchen counter
   • Argument(s): “These” bags
   • Returned value: None returned

Following the examples on the pervious slide, can you complete this slide?

Ditto here!
Question 6

Let’s convert this `while` loop to a `for` loop?

```python
fruit = ["banana", "apple", "plum"]
index = 0
while index < len(fruit):
    print(fruit[index])
    index = index + 1
```

**SOLUTION:**

```python
for index in range(len(fruit)):
    print(fruit[index])
```
Question 7

What do the following statements produce?  

SOLUTION:

b. "123456789"[2:8:-3]  ->  nothing is printed
c. "123456789"[-2:-8:-3]  ->  85
d. "123456789"[-2:-8:3]  ->  nothing is printed
e. "123456789"[8:2:3]  ->  nothing is printed
f. "123456789"[8:2:-3]  ->  96
g. "123456789"[-8:-2:-3]  ->  nothing is printed
h. "123456789"[-8:-2:3]  ->  25
Part 2 - Coding

Solve the following problems by writing a Python program on a piece of paper without using your computer!
Problem Statement:
Write an **Predicting Chatbot** that asks your name, your age and a number of years $x$ and predicts how old you will be in $x$ years, as shown in the **sample run** below:

```
Welcome to the Predicting Chatbot!
This Bot predicts how old you will be in $x$ years.
Please, enter ...
  your name (letters): BillyBob
  your age (an integer): 27
  the number of years ($x$) for the prediction: 56

Dear BillyBob:
In 56 years, you will be 83 years old.
Bye!
```
You cannot assume the user will always enter a string for the name and an integer for the age and for $x$ as illustrated in the following sample runs:

```
Welcome to the Predicting Chatbot!
This Bot predicts how old you will be in x years.
Please, enter ...
  your name (letters): Roy99
  your age (an integer): 34
You entered an invalid name: Roy99.
Bye!
```

```
Welcome to the Predicting Chatbot!
This Bot predicts how old you will be in x years.
Please, enter ...
  your name (letters): Roy
  your age (an integer): ten
You entered an invalid age: ten.
Bye!
```

```
Welcome to the Predicting Chatbot!
This Bot predicts how old you will be in x years.
Please, enter ...
  your name (letters): Roy
  your age (an integer): 10
  the number of years (x) for the prediction: lots
You entered an invalid number of years: lots.
Bye!
```
Question 9

Problem Statement:
Write a Milk Survey Bot that asks the user whether s/he has tried almond, coconut, cow, goat, hemp, oat, rice, and/or soy milk. Your Milk Survey Bot must then print the number of different kinds of milk the user has tried.

Here is a sample run:

How many different types of milk have you tried? For example, have you tried ...
... almond milk? (y/n): y
... coconut milk? (y/n): n
... cow milk? (y/n): y
... goat milk? (y/n): y
... hemp milk? (y/n): n
... oat milk? (y/n): y
... rice milk? (y/n): n
... soy milk? (y/n): y
Wow! You have tried 5 different kinds of milk (out of 8).
Question 9 (cont’d)

BONUS Part 1:
Write your Python code such that it does not include the actual number 8 in its last print statement like this: `print("Wow! You ... (out of 8).")`
Instead, your program must compute this number by calling a function.

Here is a sample run with the BONUS Part 1:

```
How many different types of milk have you tried?
For example, have you tried ...
... almond milk? (y/n): y
... coconut milk? (y/n): n
... cow milk? (y/n): y
... goat milk? (y/n): y
... hemp milk? (y/n): n
... oat milk? (y/n): y
... rice milk? (y/n): n
... soy milk? (y/n): y
Wow! You have tried 5 different kinds of milk (out of 8).
```
Question 9 (cont’d)

Problem Statement: (cont’d)
After your **Milk Survey Bot** has printed the number of different kinds of milk the user has tried, it then prints the names of the milks the user has tried.

**Hint:** This printing must be done after (outside) the loop.

Here is a **sample run** with the BONUS Part 2:

```
How many different types of milk have you tried?
For example, have you tried ...
... almond milk? (y/n): y
... coconut milk? (y/n): n
... cow milk? (y/n): y
... goat milk? (y/n): y
... hemp milk? (y/n): n
... oat milk? (y/n): y
... rice milk? (y/n): n
... soy milk? (y/n): y
Wow! You have tried 5 different kinds of milk (out of 8).
BONUS PART - You tried:
almond
cow
goat
oat
soy
```