

CS10 With-Computer Final (Fall 2017) Solutions

Snap! Questions: (use this starter file: <http://bit.ly/2zzzxA5>)

You want to replicate Python's list "slice" in Snap!. However, it should follow Snap!'s convention to index lists starting from 1 and include the rightmost element. You don't have to handle the case when the inputs are blank or do any error checking. That is, assume the left number \leq the right number, and that both numbers are between 1 and the list length. If the numbers are equal, it returns a list of the element at that index.

a) Write it recursively. You may not use any iteration (**repeat**, **repeat until**, **for**, **for each**) or higher-order functions in this solution.

The image shows a Snap! code block for a recursive list slice function. The block starts with a "slice" block containing a list "A B C D E" and indices "2" and "4". To the right is a "list" block showing elements "B", "C", "D" at indices "1", "2", "3" with a length of 3. Below is a recursive function block: "+recursive+ slice+ data : + between+ left # + and+ right # +" followed by an "if left = right" block reporting "list item left of data", and an "else" block reporting "item left of data in front of recursive slice data between left + 1 and right".

b) Write it using higher-order functions (only **map**, **keep** and **combine**). One helper you might find handy is the "numbers between () and ()" block.



Python Question:

Write a function that returns the *first duplicate word* of an essay whose words are all in lowercase (with no punctuation). If there are no duplicates, return the empty string. You *must* use a dictionary in your solution; if you forget any commands, remember there's **help(type)** and **dir(type)**, as in **help(dict)** or **dir(str)**. To split a string into a list of words, you might find string's **split** command helpful.

first_duplicate("ask not what your country can do for you ask what") → "ask"

first_duplicate("cs ten is the best class at cal") → ""

```
def first_duplicate(essay):
    dict = {}
    for word in essay.split():
        if word in dict:
            return word
        else:
            dict[word] = 1
    return ""
```