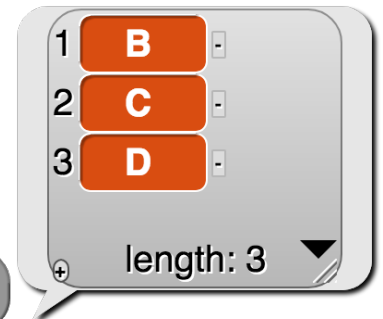


# CS10 With-Computer Final (Fall 2017, Sec 1)

There are three questions, two Snap! ones and a Python one. Save your Snap! code into a Snap! file, and name it **FinalYourfirstnameYourlastname.xml** (e.g., **FinalAlanTuring.xml**). For the Python question, create a new Python file and name it **FinalYourfirstnameYourlastname.py** (e.g., **FinalAlanTuring.py**). Submit both files on bCourses under the “online” final assignment for your lab section. All questions are independent, and each worth 5.

## 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.



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