

# FIT2004: Lab questions for week 3

**Objectives:** This prac allows you to explore the concepts learnt in week 1-3.  
**NOTE:** This prac is **NOT** assessed. You are required to write all programs in Python.

1. Copy the code for Quick Sort algorithm given in week 3 lecture slides. Understand how it works by testing it on an input array (and probably visualizing it on <http://pythontutor.com/live.html#mode=edit>). Ask your tutor if you are unsure.
2. Implement the Quick Select algorithm we covered in week 3. You may reuse the code for Quick Sort from the above task. Your program should ask the user to enter a value  $k$  and then call the Quick Select algorithm to print the  $k$ -th smallest number in the array.
3. Modify the Quick Sort algorithm in task 1 above such that it does not choose the first element as pivot. Instead, call your Quick Select algorithm in the task 2 above to find the median and choose it as the pivot. Confirm that your implementation is correct by checking whether the array is divided into two (almost) equal sub-arrays at each step.

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