

# 8593 - LAB 08

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## Instructions

1. Access the auto-grader at <https://c200.luddy.indiana.edu>
2. Please write the code for the problems in python language
3. The code should be readable with variables named meaningfully
4. Plagiarism is unacceptable and we have ways to find it, so do not do it
5. Don't change the function signature (name of the function and number and types of arguments) provided in this file.
6. Once you pass all the tests on the auto grader, show your work to the teaching assistant

## Problem

### Question

Deep in the heart of an enchanted forest, you stumble upon a collection of ancient crystals, each radiating a unique energy. Legend has it that only the most potent crystals hold the key to unlocking a hidden realm of magical wonders.

To unveil the secrets, you must discern the mystical order within these crystals. With a peculiar ritual, you're tasked to find the enchanted crystal with a value that is in position  $k$  when ranked in ascending order of value. Write a python function using heaps to find this crystal's value. If we are given a  $K$  value that is not in the range  $[0, \text{len}(\text{crystals})]$ , return -1.

### Test cases

1. Input: `[5,2,7,8,6,9,1]`  $k = 3$   
Output: 5  
Explanation: when ordered as `[1,2,5,6,7,8,9]`, we see that crystal 5 is in position  $k$  (3).
2. Input: `[4,7,12,3,9,6,2]`,  $k = 12$   
Output: -1  
Explanation: we don't have 12 crystals, so we need to return -1

### Function signature

```
def kthSmallest(arr, k):  
    ***your logic***  
    return answer
```