

You will find a private GitHub repo called `<github-username>-hw` where you will submit all your homework assignments. Clone this repo and create a `hw6` directory inside. Add this directory to the repo using `$ git add hw6`. All your code should appear in a file called `hw6.py` that lives inside the `hw6` directory. Make sure to add `hw6.py` to the repo and commit your changes with `$ git commit -a -m "good log message"`.

Question 1 (Warm-Up: Order Statistics). Write a one-line function `order(L, k)` that returns the k^{th} smallest value in L , without side-effecting L .

```
>>> order(list(range(10,20)) + list(range(10)), 3)
3
>>> order([5,4,3,2,1], 1)
2
>>> order([5,4,3,2,1], 0)
1
```

Question 2 (Longest Prefix). Write a function called `longest_prefix(s, t)` that returns the longest prefix of s and t .

```
>>> longest_prefix("abc", "abd")
'ab'
>>> longest_prefix("", "abd")
''
>>> longest_prefix("harvey", "harry")
'har'
```

Question 3 (Longest Common Substring). Given two strings s and t , the longest common substring is a string r such that r appears as a substring of both s and t and there is no other longer common substring. For example:

```
>>> >>> lcs("quantifier", "equator")
'qua'
>>> lcs("navigator", "aviator")
'ator'
```

Write a function called `lcs(s, t)` that finds the longest common substring of two given strings s and t . As a hint, consider creating a sorted list of suffixes for each string. Can you perform some merge-like operations on these two sorted lists to help you find the longest common substring?