

Assignment #18

Searching

Write definitions for each of the following Python functions, and for each function, include a clear and concise comment to describe its purpose.

1. FindNumber()

Issue instructions, and then interactively determine, using the least number of questions, the value of any positive integer chosen in advance by the user.

For each question, the function presents a number to the user, and the user gives one of the three responses '<', '>', or '=', according as the chosen number is less than, greater than, or equal to the number presented, respectively. After it has determined the number, the function outputs both the number itself and the number of questions which were asked. If the user gives a response other than '<', '>', or '=', the function issues an error message and repeats the same question.

2. MinPos(lst)

The position of its smallest item in the special list 'lst'.

Here, a *special list* is a non-empty list of distinct items such that those in positions

$k, k+1, k+2, \dots, n-1, 0, 1, \dots, k-1$

are sorted in ascending order, where 'n' denotes the length of the list and 'k' is some integer in the range $0 \leq k \leq n-1$.

Pay attention to efficiency when implementing this function.

```
      0   1   2   3   4   5   6   7   8   9
MinPos( [ 31, 38, 44, 53, 67, 75, 84, 16, 20, 27 ] ) ⇒ 7
MinPos( [ 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 ] ) ⇒ 0
MinPos( [ 12, 13, 14, 15, 16, 17, 18, 19, 20, 11 ] ) ⇒ 9
MinPos( [ 57                                ] ) ⇒ 0
```

Program Submission:

Store the function definitions in a file named 'a18.py', and turn it in for grading by typing:

```
submit-cs1117 a18.py
```

Due Date: Fri Mar 11, 10:30am