Sorting worksheet
CS51 - Fall 2026

Practice Problem 1 - Exchange
We want to be able to exchange two elements in a list. Define a function exchange that takes three parameters, a list and two indices which it uses to exchange the elements in these positions. For example, if `lst = [-12, 3, 7, -1]` calling `exchange(lst, 0, 3)` would result in `lst = [-1, 3, 7, -12]`

Practice Problem 2 - Bubble sort
Run bubble sort on the list `[37, 6, 33, 25, 36, 27, 14, 7, 40, 23]`. Here's bubblesort:

```
def bubblesort (lst):
    n = len(lst)
    for i in range(n):
        for j in range(n-i-1):
            if lst[j]>lst[j+1]:
                exchange(lst, j, j+1)
```

Practice Problem 3 - Selection sort
Run selection sort on the list `[37, 6, 33, 25, 36, 27, 14, 7, 40, 23]`. Here's selectionsort:

```
def selectionsort (lst):
    n = len(lst)
    for i in range(n-1):
        min_index = i
        for j in range(i+1, n):
            if lst[j]<lst[min_index]:
                min_index = j
        exchange(lst, i, min_index)
```

Practice Problem 4 - Insertion sort
Run insertion sort on the list `[37, 6, 33, 25, 36, 27, 14, 7, 40, 23]`. Here's insertionsort:

```
def insertionsort (lst):
    n = len(lst)
    for i in range(1, n):
        for j in range(i, 0, -1):
            if lst[j]<lst[j-1]:
                exchange(lst, j, j-1)
            else:
                break
```