Programming Assignment 4

COMP 206 (T4 - 2020)

Go to `pa4` folder contained in your `coding` folder. In it you will find three files named `arrays.c0`, `partition2.c0` and `selsort.c0`. Check the file `array.c0` for functions which print array segments and generate random arrays for testing code.

To submit

Copy the files `arrays.c0`, `partition2.c0` and `selsort.c0` to `~/submit` folder when you are done by executing the command:

```
cp arrays.c0 selsort.c0 partition2.c0 ~/submit
```

You have to complete the implementation of the following functions in them.

arrays.c0

1. `bool le_seg(int x, int[] A, int lo, int hi)` - returns the truth value of `x <= A[lo, hi)`
2. `bool good_partition(int[] A, int lo, int i, int hi)` - returns true if all the elements of `A[lo, i)` are less than or equal to all the elements of `A[i, hi)` [Hint: use le_seg]

selsort.c0

1. `int find_min(int[] A, int lo, int hi)`
2. `void swap(int[] A, int i, int j)` - swap `A[i]` and `A[j]`.

This file depends on the file `arrays.c0` for functions used in the contracts. To debug use `coin -d arrays.c0 selsort.c0`

partition2.c0

1. `int count_le(int x, int[] A, int lo, int hi)`
2. `int partition2(int[] A, int lo, int pi, int hi)` - Use extra memory to partition the array `A[lo, hi)` using pivot `A[pi]`.
    - Suppose you have a copy of elements in `A[lo, hi)`, and you also know the final location of

pivot in it. Scan the elements of the copy and put them on the correct side of pivot, either left or right.

- To compute the final location of pivot use the value returned by `count_le(..)`

To debug this file use `coin -d arrays.c0 selsort.c0 partition2.c0`