CMPT 125 Quiz - October 21, 2019

Name: _____

SFU ID:_____

Q1 . How many ***comparisons*** will *Binary Search* make on input A = [2,3,4,5,6,7,8] when searching for 6? Show some intermediate steps of the computation.

Q2.

```
stack_t* s = stack_create();
push(s, 1);
push(s, 2);
push(s, 3);
printf("%d ", pop(s));
push(s, 5);
push(s, 6);
printf("%d ", pop(s));
printf("%d ", pop(s));
printf("%d ", pop(s));
push(s, 7);
```

a) What will be the output of this code fragment?
b) What will be the state of the stack in the end?
Show the intermediate steps of the computation.

Q1:

The algorithm first compares to 5. We have 6>5 hence we search for 6 in [6,7,8].

Then it compares to 7. We have 6<7 hence we search for 6 in [6]

We find 6.

Total: 3 comparisons.

Q2:

```
stack_t* s = stack_create(); // s = []
push(s, 1);  // s = [1]
push(s, 2);  // s = [1,2]
push(s, 3);  // s = [1,2,3]
printf("%d ", pop(s)); // s = [1,2]  output 3
push(s, 5);  // s = [1,2,5]
push(s, 6);  // s = [1,2,5,6]
printf("%d ", pop(s)); // s = [1,2,5]  output 6
printf("%d ", pop(s)); // s = [1,2]  output 5
printf("%d ", pop(s)); // s = [1]  output 2
push(s, 7); // s = [1,7]

In the end s = [1,7]
```