EECS 281 Lab 2 Bonus Written Problem

~ UNGRADED ~

BW-2. Previous Greater Element

You are given a vector of distinct integers `vec`, and you are told to implement a function that returns a vector that stores the *previous greater element* that exists before each index. If no previous greater element exists, -1 is stored.

For example, given the initial vector **[18, 19, 12, 14, 13]**, your function should return the vector **[-1, -1, 19, 19, 14]**. This is because there is no element before 18 that is greater than 18 (the same applies for 19), the closest element before 12 that is greater than 12 is 19, the closest number before 14 that is greater than 14 is 19, and the closest number before 13 that is greater than 13 is 14. The program must have a runtime complexity of at most $\Theta(n)$ time and a space complexity of $\Theta(n)$, where n is the number of elements in the vector. Implement the program in the space below. You MAY use anything from the STL. You are limited to **15 lines of code** (not including function headers, comments, or braces on a single line).

```
// Bonus Written Problem (Lab 2): Previous Greater Element

vector<int> prevGreatest(vector<int>& vec) {
```