Yousif Khalil Abdulkarim
Lab report for assignment 4
2023-10-20

Exercise 1

Exercise 1 a

The assignment is about sorting an int vector with std::sort.
I solved it by following the assignment instructions and looking up the documentation for std::sort. I found I should pass vector.start as the first parameter and vector.end as the last parameter to std::sort method.

Print-out

```
1
11
15
2
7
16
_____________
0
1
1
1
2
2
4
4
5
5
7
7
7
9
11
14
15
16
18
18
```

Exercise 1 b

The assignment is about sorting an int c-array with std::sort.
I solved it by following the assignment instructions and looking up the documentation for std::sort. I found I should pass the reference of the first element as the first parameter and the reference of the last element as the last parameter to std::sort.

Print-out

```
1
```

```
11
15
2
7
16
_____________
0
1
1
1
2
2
4
4
5
5
7
7
7
9
11
14
15
16
18
18
```

Exercise 1 c

The assignment is about sorting an int vector with std::sort in descending order.
I solved it by following the assignment instructions and looking up the documentation for std::sort. I found I should pass vector.rstart as the first parameter and vector.rend as the last parameter to std::sort method.

Print-out

```
1
11
15
2
7
16
_____________
18
18
16
15
14
11
9
7
7
7
5
5
4
```

```
4
2
2
1
1
1
0
```

Exercise 1 d

The assignment is about sorting an int c-array with std::sort in descending order.
I solved it by following the assignment instructions and looking up the documentation for std::sort. I found I should pass the reference of the first element as the first parameter and the reference of the last element as the second parameter to std::sort. The last parameter to std::sort was the compare, the compare function compares the elements in descending order.

Print-out

```
1
11
15
2
7
16
_____________
18
18
16
15
14
11
9
7
7
7
5
5
4
4
2
2
1
1
1
0
```

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Exercise 2

Exercise 2 a

The assignment is about making the PersonReg class sortable. We make PersonReg sortable by adding new methods to the class Begin method that returns pointer to the first element and End method that returns pointer to the last element. We need to add a comparator operator overloading to the Person class. Afterwards we can use random_shuffle to randomize the order PersonReg and sort it with std::sort.

Print-out

```
namn: namn-6
address: address
----------
namn: namn-15
address: address
----------
namn: namn-14
address: address
----------
namn: namn-11
address: address
----------
namn: namn-17
address: address
----------
namn: namn-7
address: address
----------
namn: namn-4
address: address
----------
namn: namn-9
address: address
----------
namn: namn-18
address: address
----------
```

Exercise 2 b

This exercise is almost the same as exercise 2a but we change the comparator function in the Person class so it sorts the elements in reverse order.

Print-out

```
----------
namn: namn
address: address-13
----------
namn: namn
```

```
address: address-2
----------
namn: namn
address: address-10
----------
namn: namn
address: address-3
----------
namn: namn
address: address-1
----------
namn: namn
address: address-12
----------
namn: namn
address: address-8
----------
namn: namn
address: address-20
----------
namn: namn
address: address-5
----------
namn: namn
address: address-16
----------
namn: namn
address: address-19
----------
namn: namn
address: address-6
----------
namn: namn
address: address-15
----------
namn: namn
address: address-14
----------
namn: namn
address: address-11
----------
namn: namn
address: address-17
----------
namn: namn
address: address-7
----------
namn: namn
address: address-4
----------
namn: namn
address: address-9
----------
namn: namn
address: address-18
----------


###############


----------
namn: namn
```

```
address: address-1
----------
namn: namn
address: address-10
----------
namn: namn
address: address-11
----------
namn: namn
address: address-12
----------
namn: namn
address: address-13
----------
namn: namn
address: address-14
----------
namn: namn
address: address-15
----------
namn: namn
address: address-16
----------
namn: namn
address: address-17
----------
namn: namn
address: address-18
----------
namn: namn
address: address-19
----------
namn: namn
address: address-2
----------
namn: namn
address: address-20
----------
namn: namn
address: address-3
----------
namn: namn
address: address-4
----------
namn: namn
address: address-5
----------
namn: namn
address: address-6
----------
namn: namn
address: address-7
----------
namn: namn
address: address-8
----------
namn: namn
address: address-9
----------
```

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Exercise 3

This exercise is about removing elements from an array or vector using remove_if iterator function. The remove_if functions does not really remove the element, it puts the element to be removed in the end of the array returns a pointer to last element that is not flagged as removed.

Print-out

```
namn: namn-6
address: address
----------
namn: namn-15
address: address
----------
namn: namn-14
address: address
----------
namn: namn-11
address: address
----------
namn: namn-17
address: address
----------
namn: namn-7
address: address
----------
namn: namn-4
address: address
----------
namn: namn-9
address: address
----------
namn: namn-18
address: address
----------
```