

Practice 03

Destructor, copy constructor and operator=

1. Create a class Vector that has the following functionality:
 - a. Contains fields for a dynamically allocated int array, size and capacity.
 - b. Default capacity of 4 items and an allocated array of this size.
 - c. Constructor with a parameter for capacity that allocates the array with the given capacity.
 - d. Implements the following methods:
 - i. **size()**
Returns the number of elements in the array.
 - ii. **capacity()**
Returns the capacity of the array.
 - iii. **at(index)**
Returns a reference to the element at the specified index.
 - iv. **push_back(element)**
Adds the specified element at the back of the array.
 - v. **erase(index)**
Removes the element at the specified index keeping the order of the elements.
 - vi. **reserve(capacity)**
Changes the capacity of the array.
 - e. Automatically reserves more memory for the array if there isn't enough.
2. Using your Vector class, create an object of your class and read, from the console, commands of the following type:
`<cmd> [param1]`
where `<cmd>` can be any of the following commands:
 - `add <num>` - adds the given number to the back of the Vector.
 - `del <num>` - removes every occurrence of the given number.
 - `get <ind>` - prints the element on the given index in the Vector.
 - `find <num>` - prints the index of the first occurrence of the given number.
 - `see` - prints each element of the Vector in order.
 - `end` - terminates the program.

Sample input/output (where << is output and >> is input):

```
>> add 5
>> add 8
>> add 5
>> add 3
>> add 9

>> see
<< 5 8 5 3 9
```

```
>> fnd 5
<< Element 5 found at index 0.
```

```
>> del 5
>> fnd 5
<< Element 5 was not found.
```

```
>> see
<< 8 3 9
```

```
>> get 2
<< Element at index 2 is 9.
```

```
>> end
<< Bye!
```