

Practice 02

Classes and separate compilation

1. Recap.

- What is “**separate compilation**” and why do we use it?
- What is a **header file**?
- What is a **source file**?
- What is an **include guard**?
- What is a **class** and what is an **object**?
- What is a **method**?
- What is the keyword **this**?
- What is a **constructor**?
- What is an **access modifier** and what do they do?
- What is the difference between **struct** and **class**?

2. Problems.

1. Create a class Beer containing fields (data members) for the beer's brand (with max length of 127 characters) and volume (in ml). Write a default constructor. Create an object of this class.
 - a. Write set and get methods for the beer's brand and volume. Write a parameterized constructor. Create a beer (an object of type Beer) with brand's name Stella Artois and volume of 500ml.
 - b. Write a method that can add a beer to another beer, that works like this:
beer1 is **Becks** and there's **500**ml of it.
beer2 is **Heineken** and there's **500**ml of it.
`beer1.add(beer2, 250);`
After this line of code the beers are now as follows:
beer1 is **Becks&Heineken** and there's **750**ml of it.
beer2 is **Heineken** and there's **250**ml of it.
 - c. Write a method that checks whether a beer has any amount of a certain brand mixed into it.

Example:

From b. *beer1* is **Becks&Heineken** and there's **750**ml of it.

```
beer1.check("Heineken"); // Should return true
beer1.check("Stella Artois") // Should return false
beer1.check(beer2.getBrand()); // Should return true
```

2. Implement class Vector that has the following properties:
 - a. Contains fields for a dynamically allocated int array, size and capacity.
 - b. Default capacity of 8 items and an allocated array of this size.
 - c. Implements the following methods:
 - i. **push_back**(element)
Adds the specified element at the back of the array.
 - ii. **at**(index)
Returns the element at the specified index.
 - iii. **erase**(index)
Removes the element at the specified index keeping the order of the elements.
 - d. Automatically makes the array larger when needed.
 - e. Deletes the used memory using a method.