

Classes I

C++ in QF I - a course by Paweł Sakowski

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Labs 05

Last time we learned about:

- Arrays.
- Pointers.
- Structures.

Today we will learn about *Classes*:

- What is and how to create a **class**.
- **Members** of the class.
- **Methods**.
- **Constructors**.

Example. Write a class representing rectangle:

- Start with structure-like mechanism.
- Move members representing the data to private part.
- Write a method to set values of data members.
- Write methods that return area and perimeter of the rectangle.
- Write a method, that will return true if the rectangle is square.
- Write a constructor, which will set up the values at start.
- Overload the constructor to have possibility to provide only one value in case it is a square.

Exercises:

- 1 Write a class for a coupon bond. Remember to:
 - include its characteristics as members
 - define the constructor that will assign values of bond parameters to appropriate members
 - add method that will calculate its price
 - add method that will check whether a given bond is a zero-coupon bond

Write a program that will create an object of this class, print out bond parameters, and call both methods.

Hint: you can use the function from:

<https://gist.github.com/pawelsakowski/7278550>

- ② Similar as in Exercise 1, write a class for European option. Include a method for Black-Scholes price of the option.

Hint: you can use a function from
<https://gist.github.com/pawelsakowski/9502742>.

You will have to include an additional function for cumulative normal distribution. Simply take the code from
<https://gist.github.com/pawelsakowski/9502821>, save it to a file called `normdist.h`, place next to your file with `main()` function and include it with:

```
#include "normdist.h"
```

at the top of your source code.

Thank you!