



C++

Yoann Cerda



About me

- Yoann Cerda
- Current pro. activities
 - Software Engineer at Kaiterra
 - Software Engineering Lecturer at BJTU
 - Software Engineer at Crowd Bureau
- Projects <https://github.com/tuxlinuxien>
- tuxlinuxien@gmail.com
- Yoann-yongan



Class description

- 32 Hours
 - 16 sessions of 2 hours each
- English
- Self learning method



Session schedule

- 1h lecture
- 1h exercise
 - Each exercise will have to be finished the next week



Final project

- **my_tar**
Students will have to copy the same functionality as the linux command “tar”. This will help the students to understand how a program interacts with a user, I/O and memory management.
- **my_ftp**
Students will have to implement a basic ftp server compatible with the FTP protocol. This project will focus on network programming, data streaming, I/O, parsing and multi-threading.
- **my_http**
Students will have to implement a fully working HTTP server. This will focus on parsing, network and data streaming.

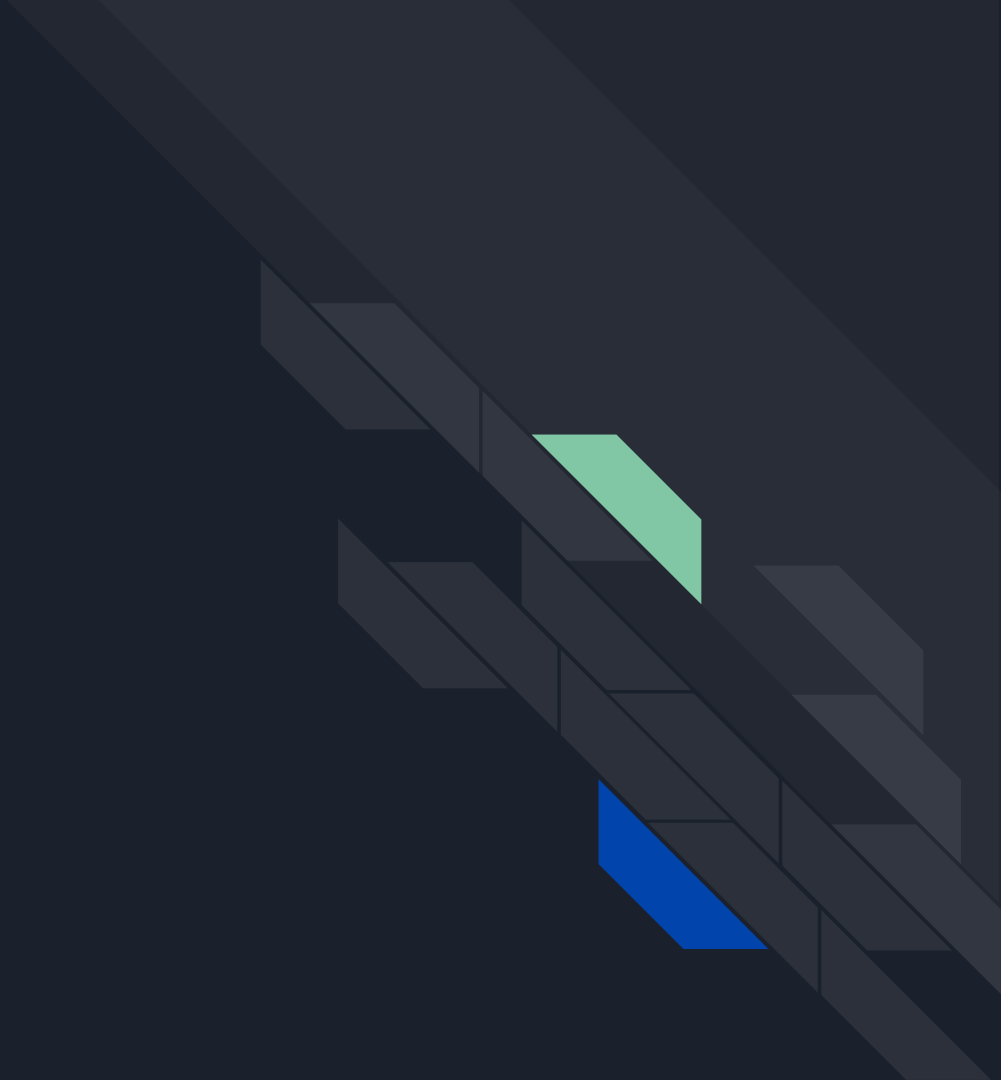
The final project will be done by groups of 3 to 5 students in each case.



Score calculation

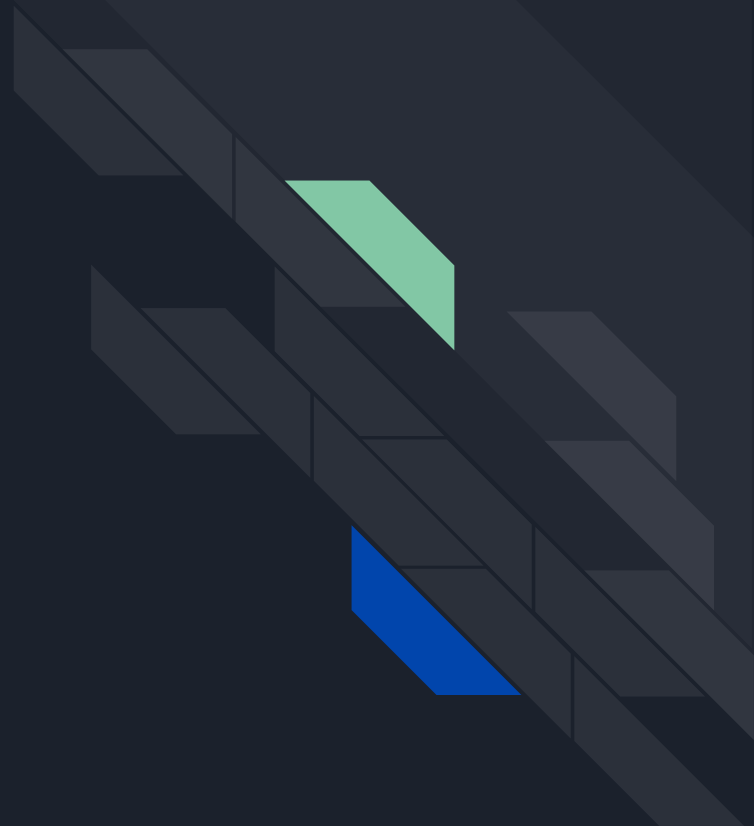
- 10% attendance
- 50% homework
 - Average score on 6 exercises
- 40% final project
 - Corrected manually during the last session

Plan



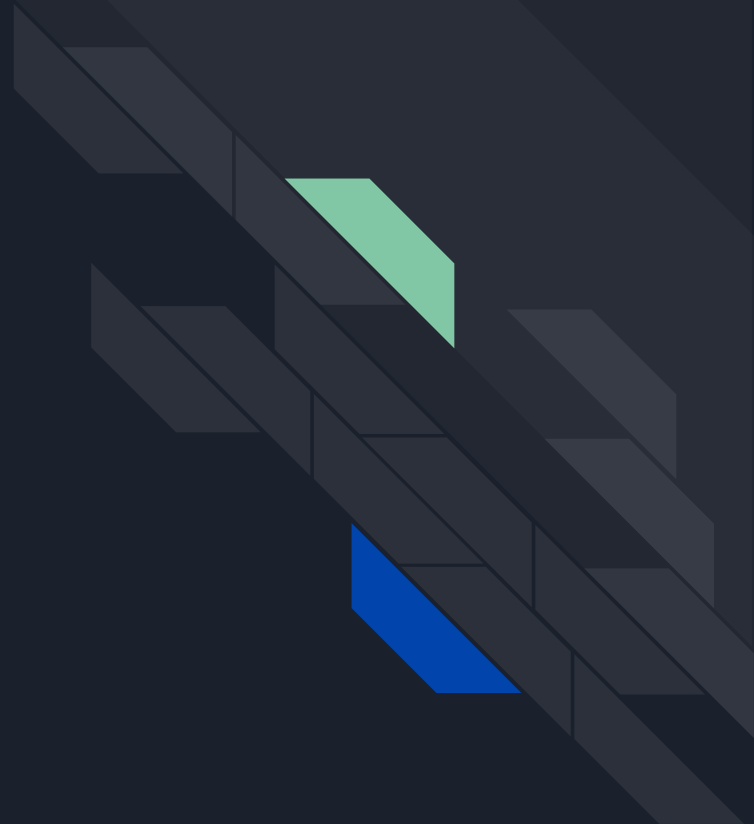
#1

- OOP
- History of C++
- C vs C++



#2

- Tools
 - Linux
 - Git
 - G++
- Environment setup



#3

- What is a compiler
- C++ compiler
- Ex1: Hello-world



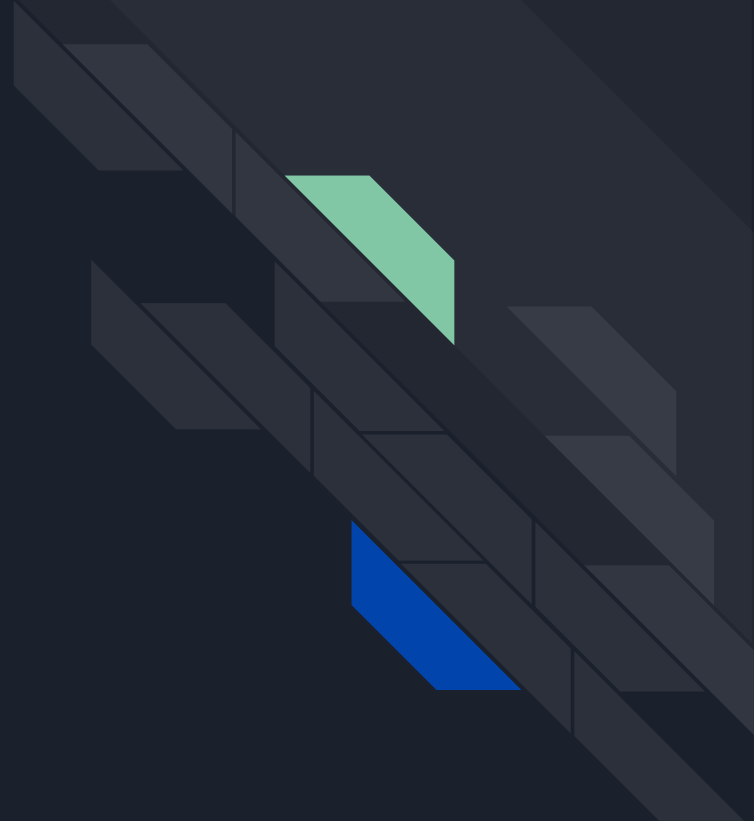
#4

- Semantics of the cpp
- Ex 2: fibonacci



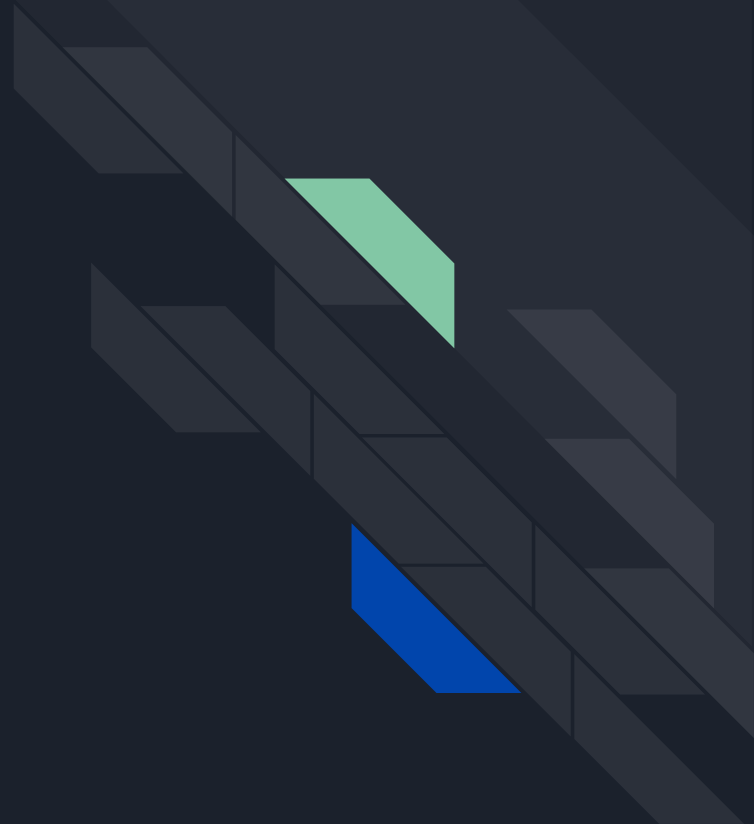
#5

- Variables
- Type of variables



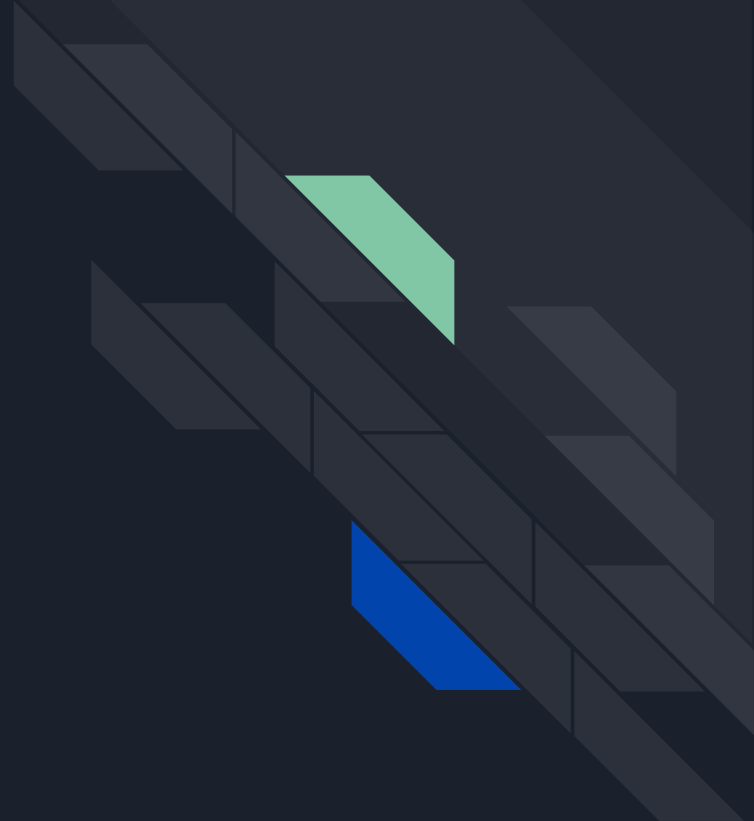
#6

- Operators
- Conditions
- Ex3: infinite-calculator (2 weeks)



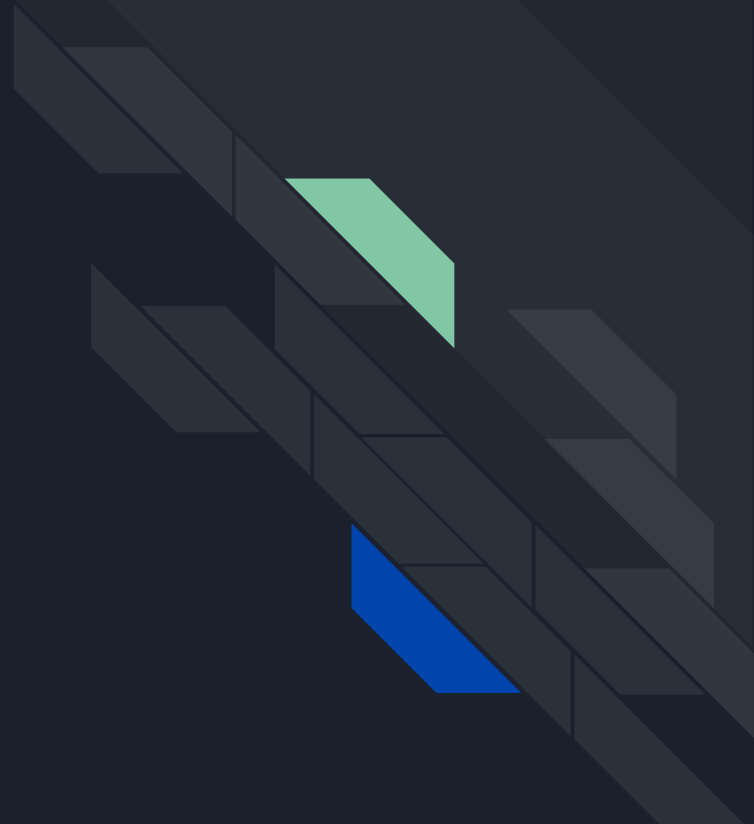
#7

- Arrays and Multidimensional Arrays



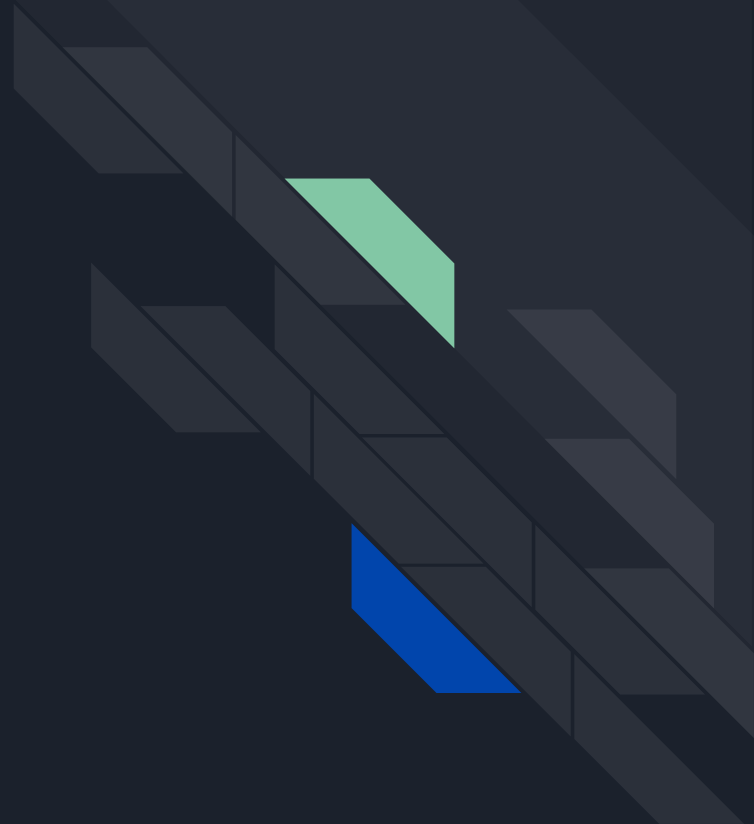
#8

- Loops
- Nested loops
- Ex4: bubble sort
- Final project follow up



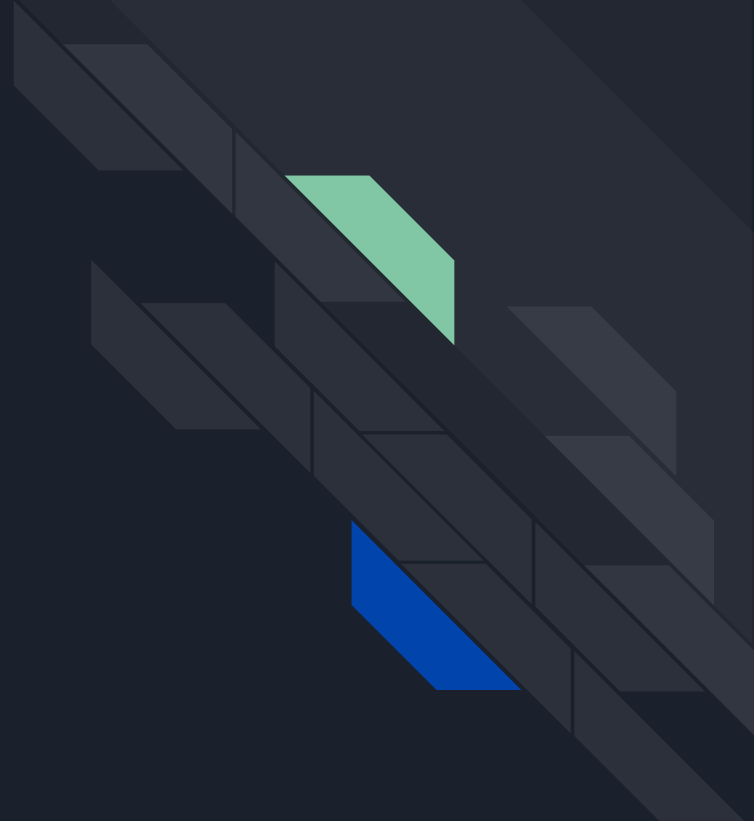
#9

- Functions
- Scope
- Overloading



#10

- Reference variable
- Enums



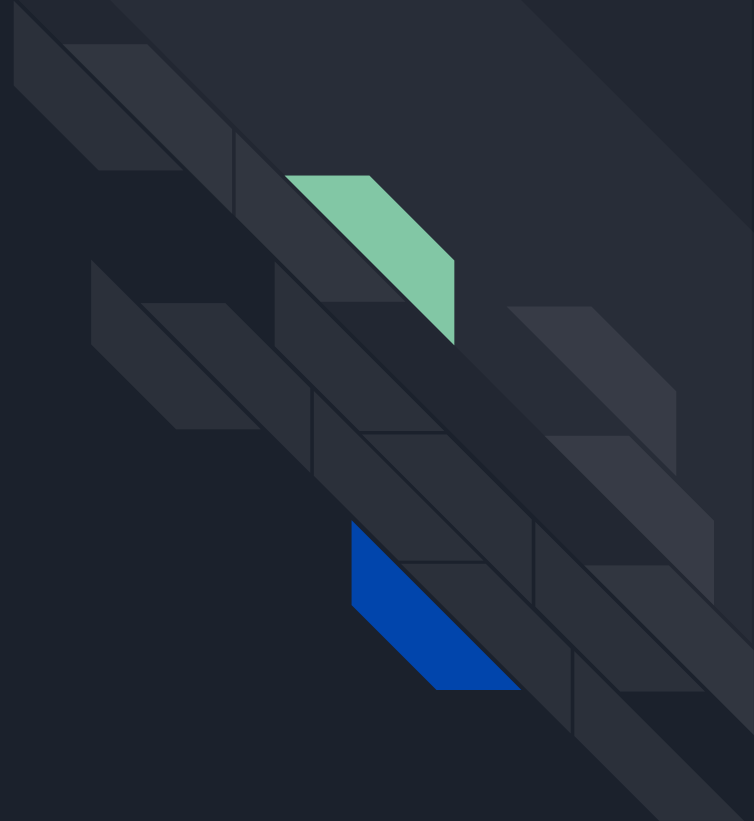
#11

- Pointers
- Dynamic Memory allocation
- Type casting
- Ex5: `my_list<T>`



#12

- Data structures and pointers
- Classes
- Operator overloading



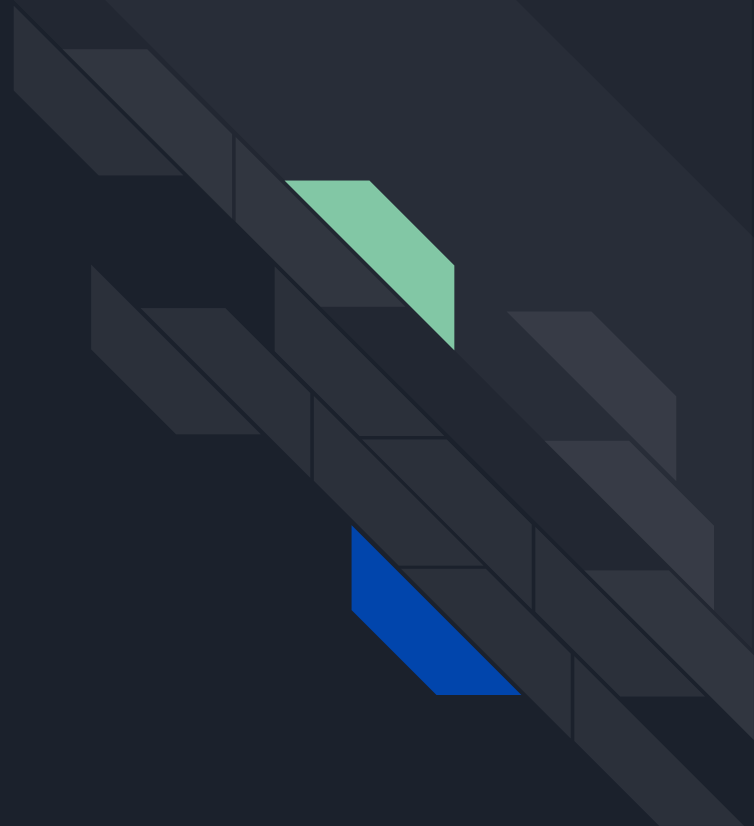
#13

- Inheritance
- Virtual functions
- Polymorphism
- abstract classes
- Ex 6: The C++ army



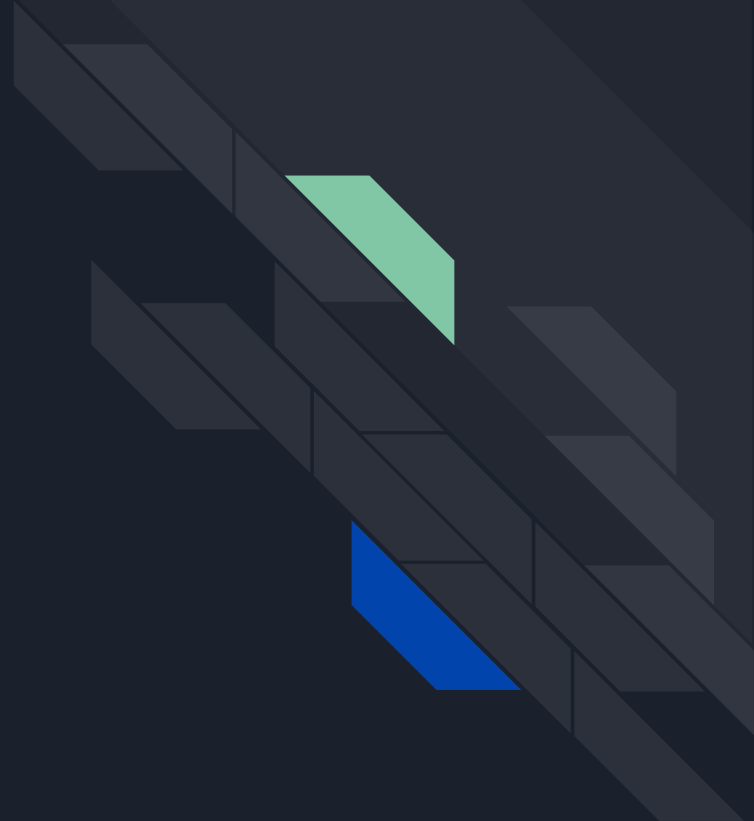
#14

- Function template
- Class template



#15

- Exceptions
- Name spaces
- Final project follow-up



#16

Final project presentation

