



Streams, strings and nullptr

Bachelor of Science - École polytechnique

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Input and output streams

- Abstraction of a device with two operations
 - Write: append data to the device
 - Read: fetch data from the device
- Three types of streams in C++ (`#include <iostream>`)
 - Input stream: `std::istream`
 - Output stream: `std::ostream`
 - Input/output stream: `std::iostream`
- Usage:
 - `<<` to append data to an input stream
 - `>>` to fetch data from an output stream

Input and output streams

- The iostream library provides two streams
 - std::cout is the standard output
 - std::cin is the standard input
 - Both are global variables (objects)

```
#include <iostream>

int main(int argc, char* argv[]) {
    std::cout << "Hello, world!!!" << std::endl;
    return 0;
}
```

std::endl represents the end of line

Strings

- C++ defines a standard type for the strings: `std::string`
 - Behaves like a `const char*`
 - But adds many useful methods
- Prefer using `std::string` than `const char*` in C++

```
int main(int argc, char* argv[]) {
    std::string s = "Hello, world!!!";
    std::cout << s << " has " << s.length()
                  << " characters" << std::endl;
    return 0;
}
```

nullptr

- `nullptr` is a keyword that represents the null pointer

```
void f(monster_t* m) {  
    if(m == nullptr)  
        std::cout << "Error: null pointer" << std::endl;  
}
```