# C++

### Basic

- OOP, Functional, Procedural, Generic (Templates)
- C with Classes - 1970 - Bjarne Stroustrup

### Syntax

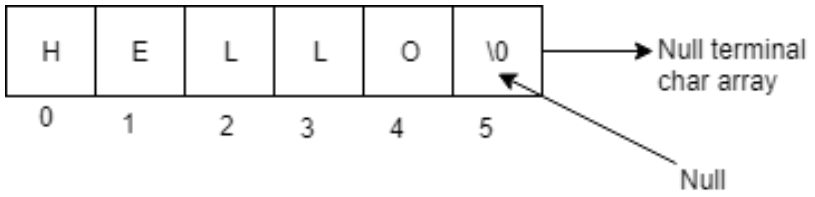
```
#include <cstudio>
using namespace std;

int main (int argc, char ** argv) {   //char * argv[]
    puts("loop test");
    for(int i = 0; argv[i]; i++) {
        printf("%d: %s\n", i, argv[i];
    }
    return 0;  //sucess
}
```

- statement → terminate with ; [unit of code]
- function → reuse, called by other function
- main() → main function
- const char * str = “Hello World”
- //comment
- cstudio → puts, printf
- iostream → cout, cin
- %d → token for printf to know it is int
- Identifers → tokens for identifying the name for variables, function, and defined types
- _private_identifier
- ___system_use_only

### String

- Strings in C are just null terminated char arrays.
- Null → mostly 0, since C++11 an actual null_ptr type exists so that we can have proper zero.
- C++ has a proper string class (`std::string`) that conceptually wraps a `char[]` and fixes problems like:
  - What if we forget the null?
  - What if we want to know the length?
- \0 → ASCII character for null




- `char name[6] = "Hello";`