A Brief Introduction to C++11

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- History
- New properties
- Personal opinions

History

Year	C++ Standard	Informal name
1998	ISO/IEC 14882:1998	C++98
2003	ISO/IEC 14882:2003	C++03
2007	ISO/IEC TR 19768:2007	C++TR1
2011	ISO/IEC 14882:2011	C++11

New properties

- Rvalue references
- Range-based for loop
- Type inference
- Uniform initialization
- Null pointer constant
- …

Rvalue references

L-values have storage addresses that are programmatically accessible to the running program (e.g., via some address-of operator like "&" in C/C++), meaning that they are variables or dereferenced references to a certain memory location.
R-values can be l-values or non-l-values—a term only used to distinguish from l-values.

n = 100;

Lvalue reference & Rvalue reference &&

For Loop

C++98

```
for (i = 0; i < n; i++) {
    …
}
```

C++11

```
for (T obj: array) {
    …
}
```

Advantage：

- Simple；
- Avoid index out-of-bound.

Type inference

- key-word: ”auto”
- infer the type of variable automatically

CANNOT:

- Used as parameter of function;
- Without initialization；
- Used in template；

Uniform initialization

- Containers and class members can be initialized in an easier way.

```
vector <T>vectorName = {first, second, third};

class name {
public:
    T var = value;
};  /* Variables don't need to be initialized in
            constructor     function */
```

Null pointer constant

- A new key word: “nullptr”
- nullptr == NULL
- NULL == 0
- nullptr != 0

Personal opinions

- Check whether your compiler support the new properties before using it.
- The previous standard is strong enough.
- A predication of the future.

Reference

- C++11 - Wikipedia, the free encyclopedia
http://en.wikipedia.org/wiki/C%2B%2B11#Rvalue_references_and_move_constructors
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Any Question?

Thank You for Listening!