.

const const

const const, const const,

+const const const, const int*p = &a; const, const int int * const p = &a; const, const int*

gcc -E source.c gcc -S source.c -o source.asm gcc -c source.asm -o source.o ld source.o *.o

c c++

c c++ shell python java jvm

c++ c java

c++ 1. 2. CPU 3. printf.o printf.o printf.o ### vector vector size, addr) vector

, , :

struct class

struct class 1. struct public, class private 2. struct class

struct

CPU CPU int .

sizeof strlen

sizeof (+, -) strlen sizeof strlen :

```
char array[1000];
memset(array, '\0', 1000);
printf("strlen(array) = %d\n", strlen(array));
printf("sizeof(array) = %d\n", sizeof(array));
```

strlen 0, sizeof 1000.

struct union

struct union . struct union union union union union .

new/delete malloc/free

1. new malloc
2. new malloc delete .
3. new malloc . ### wild pointer (hang pointer),
4.
5. delete free (delete NULL

static

c static 1. static static static static static
2. static extern static c++ c static c c++ static c++ .
1. static static . .
1 2) private,
2. static 1. this static this .
. public, private, protected . 2.
.

this

this . A, const func(), func func(A*
const this), const const a, const this const A* const,
const const const const const const this const const
const const const A* const const A* const, const const const const

const

const const const const const const const .

const const const const .

extern

c extern

, :

public protected, .

1.
2. return .
3. Example A(100); Example B = A; B A B.
Example A(100); Example B; B = A; B A B.
note: g++ RVO(return value optimation) g++ -fno-elide-constructors.

1.
2.

. ./copyconstructor/example3.cpp)

. . ./copyconstructor/example4.cpp)

3.

a b, a a

null.(example5.cpp);

1+2 “c”,
“123”

vector vec; vec.push_back(Mystring(“hello”)); Mystring(“hello”)

. std::move . .
copyconstructor/example6.cpp

1, ; empty/Empty.cpp 1 1
.

1. 2. 3. 4.

. 1.
2. .
:

.

virtual

, 8 8

. ####

Base *
base = new Derived; Base base .

GrandParent father mother GrandParent child.father::data
C++ GrandParent father mother virtual GrandParent Gra
virtualInheritance/example1.cpp example2.cpp

c++ c c c++
static_cast 1. static_cast int double 2. static_cast .
int x = -1; uint y = static_cast(x); . 3. static_cast static_cast

dynamic_cast

1. dynamic_cast dynamic_cast static_cast .
dynamic_cast static_cast , .

dynamic_cast dynamic_cast .
./cast/dynamic_cast.cpp

3. const_cast const_cast, const const x const x x co
4. reinterpret_cast cast

C++ new . c++
./empty/Empty.cpp auto_ptr unique_ptr 8 shared_ptr 16 .
auto_ptr auto_ptr 1. auto_ptr ptr0 =
ptr1 ptr0 ptr0 ptr1 ptr1 null. 2. auto_ptr STL STL auto
auto_ptr auto_ptr const . vector.push_back const
T& value, T&& value, const c++11 auto_ptr const
T& auto_ptr const auto_ptr const auto_ptr .
3. auto_ptr . #### unique_ptr unique_ptr auto_ptr unique_ptr auto_ptr
1. unique_ptr c++11 unique_ptr vector.push_back unique_ptr
2. unique_ptr . unique_ptr 1. #### share_ptr
unique_ptr share_ptr +1 -
1 0

shared_ptr weak_ptr . ####
weak_ptr weak_ptr shared_ptr 1. shared_ptr weak_ptr
2. 3. * -> .lock shared_ptr

1. unique_ptr
2. release delete
3. delete get delete
4. get # STL ## STL
5.
6.
7.
8.
9.
10. container allocator functor adaptor Functor.

class operator() class operator()

new delete

new delete new 1. operator new 2. delete 1. operator delete 2. .

stl allocator alloc:allocate() alloc::deallocate alloc::construct() alloc::destory()

SGI malloc free 128bytes . (memory pool) 16 free-lists, 8,16,...128bytes 128bytes 16 free-lists .

free-lists 20 32bytes free-lists[2] 0 free-lists 32*40bytes 19 free_

STL operator* operator-> ### value type. c++ value type.
template typename iterator_traits<I>::value_type func(I ite) { return *ite; }

template struct iterator_traits<T*> { typedef T value_type; }

value_type, difference type, pointer, reference, iterator catagoly, STL

iterator catogory Input iterator: Output iterator: forward iterator: , bidirectional iterator: random access iterator: p+n, p1-p2

, 1.
2. STL

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