

```
1: // $Id: demangle.cpp,v 1.3 2019-02-14 15:48:36-08 - - $
2:
3: // Demangle a typeid(X).name() string
4:
5: #include <cstdlib>
6: #include <iostream>
7: #include <list>
8: #include <map>
9: #include <memory>
10: #include <string>
11: #include <typeinfo>
12: #include <vector>
13:
14: using namespace std;
15:
16: #include <cxxabi.h>
17: template <typename type>
18: string demangle (const type &object) {
19:     const char *const name = typeid (object).name();
20:     int status = 0;
21:     using deleter = void (*) (void*);
22:     unique_ptr<char,deleter> result {
23:         abi::__cxa_demangle (name, nullptr, nullptr, &status),
24:         std::free,
25:     };
26:     return status == 0 ? result.get() : name;
27: }
28:
29: class foo { };
30: class bar: foo { };
31: class baz: bar { };
32: template <typename T> class tmp1 { T x; };
33:
34: template <typename type>
35: void print_demangled (const string &str) {
36:     type obj {};
37:     cout << str << " => " << sizeof obj << endl;
38:     cout << "    mangled:   " << typeid(obj).name() << endl;
39:     cout << "    demangled: " << demangle (obj) << endl;
40: }
41:
42: template <typename type>
43: void print_demangled (const string &str, const type& obj) {
44:     print_demangled<type> (str);
45:     cout << "    value: " << obj << endl;
46: }
47:
```

```
48:
49: #define DEMANGLE_T(X) print_demangled<X> (#X)
50: #define DEMANGLE_V(X) print_demangled (#X, X)
51: int main() {
52:     using map_string_int = map<string,int>;
53:     DEMANGLE_T (bool);
54:     DEMANGLE_T (char);
55:     DEMANGLE_T (signed char);
56:     DEMANGLE_T (unsigned char);
57:     DEMANGLE_T (short);
58:     DEMANGLE_T (signed short);
59:     DEMANGLE_T (unsigned short);
60:     DEMANGLE_T (int);
61:     DEMANGLE_T (signed int);
62:     DEMANGLE_T (unsigned int);
63:     DEMANGLE_T (long);
64:     DEMANGLE_T (signed long);
65:     DEMANGLE_T (unsigned long);
66:     DEMANGLE_T (long long);
67:     DEMANGLE_T (float);
68:     DEMANGLE_T (double);
69:     DEMANGLE_T (long double);
70:     DEMANGLE_T (size_t);
71:     cout << "\f" << endl;
72:     DEMANGLE_T (foo);
73:     DEMANGLE_T (bar);
74:     DEMANGLE_T (baz);
75:     DEMANGLE_T (tmpl<int>);
76:     DEMANGLE_T (vector<string>);
77:     DEMANGLE_T (vector<int>);
78:     DEMANGLE_T (list<vector<long>>);
79:     DEMANGLE_T (map_string_int);
80:     DEMANGLE_V (__FILE__);
81:     DEMANGLE_V (__LINE__);
82:     DEMANGLE_V (__DATE__);
83:     DEMANGLE_V (__TIME__);
84:     DEMANGLE_V (__func__);
85:     DEMANGLE_V (__PRETTY_FUNCTION__);
86:     return 0;
87: }
88:
89: //TEST// alias grind="valgrind --leak-check=full --show-reachable=yes"
90: //TEST// grind --log-file=demangle.log demangle >demangle.out 2>&1
91: //TEST// mkpspdf demangle.ps demangle.cpp* demangle.out demangle.log
92:
```

```
1: @@@@ mkc: starting demangle.cpp
2: checksource demangle.cpp
3: ident demangle.cpp
4: demangle.cpp:
5:      $Id: demangle.cpp,v 1.3 2019-02-14 15:48:36-08 - - $
6: cpplint.py.perl demangle.cpp
7: Done processing demangle.cpp
8: g++ -g -O0 -Wall -Wextra -Wpedantic -Wshadow -fdiagnostics-color=never -
std=gnu++2a -Wold-style-cast demangle.cpp -o demangle -lm
9: rm -f demangle.o
10: @@@@ mkc: finished demangle.cpp
```

```
1: bool => 1
2:   mangled:   b
3:   demangled: bool
4: char => 1
5:   mangled:   c
6:   demangled: char
7: signed char => 1
8:   mangled:   a
9:   demangled: signed char
10: unsigned char => 1
11:   mangled:   h
12:   demangled: unsigned char
13: short => 2
14:   mangled:   s
15:   demangled: short
16: signed short => 2
17:   mangled:   s
18:   demangled: short
19: unsigned short => 2
20:   mangled:   t
21:   demangled: unsigned short
22: int => 4
23:   mangled:   i
24:   demangled: int
25: signed int => 4
26:   mangled:   i
27:   demangled: int
28: unsigned int => 4
29:   mangled:   j
30:   demangled: unsigned int
31: long => 8
32:   mangled:   l
33:   demangled: long
34: signed long => 8
35:   mangled:   l
36:   demangled: long
37: unsigned long => 8
38:   mangled:   m
39:   demangled: unsigned long
40: long long => 8
41:   mangled:   x
42:   demangled: long long
43: float => 4
44:   mangled:   f
45:   demangled: float
46: double => 8
47:   mangled:   d
48:   demangled: double
49: long double => 16
50:   mangled:   e
51:   demangled: long double
52: size_t => 8
53:   mangled:   m
54:   demangled: unsigned long
```

```
55:
56: foo => 1
57:   mangled:   3foo
58:   demangled: foo
59: bar => 1
60:   mangled:   3bar
61:   demangled: bar
62: baz => 1
63:   mangled:   3baz
64:   demangled: baz
65: tmpl<int> => 4
66:   mangled:   4tmplIiE
67:   demangled: tmpl<int>
68: vector<string> => 24
69:   mangled:   St6vectorISSaISSEE
70:   demangled: std::vector<std::string, std::allocator<std::string> >
71: vector<int> => 24
72:   mangled:   St6vectorIiSaIiEE
73:   demangled: std::vector<int, std::allocator<int> >
74: list<vector<long>> => 16
75:   mangled:   St4listIST6vectorIlSaIlEESaIS2_EE
76:   demangled: std::list<std::vector<long, std::allocator<long> >, std::al
lllocator<std::vector<long, std::allocator<long> > > >
77: map_string_int => 48
78:   mangled:   St3mapISSiSt4lessISSaIS4pairIKSsiEEE
79:   demangled: std::map<std::string, int, std::less<std::string>, std::al
locator<std::pair<std::string const, int> > >
80: __FILE__ => 13
81:   mangled:   A13_c
82:   demangled: char [13]
83:   value: demangle.cpp
84: __LINE__ => 4
85:   mangled:   i
86:   demangled: int
87:   value: 81
88: __DATE__ => 12
89:   mangled:   A12_c
90:   demangled: char [12]
91:   value: May  8 2019
92: __TIME__ => 9
93:   mangled:   A9_c
94:   demangled: char [9]
95:   value: 11:31:25
96: __func__ => 5
97:   mangled:   A5_c
98:   demangled: char [5]
99:   value: main
100: __PRETTY_FUNCTION__ => 11
101:   mangled:   A11_c
102:   demangled: char [11]
103:   value: int main()
```

```
1: ==27583== Memcheck, a memory error detector
2: ==27583== Copyright (C) 2002-2017, and GNU GPL'd, by Julian Seward et al
.
3: ==27583== Using Valgrind-3.14.0.GIT and LibVEX; rerun with -h for copyri
ght info
4: ==27583== Command: demangle
5: ==27583== Parent PID: 27582
6: ==27583==
7: ==27583==
8: ==27583== HEAP SUMMARY:
9: ==27583==      in use at exit: 0 bytes in 0 blocks
10: ==27583==    total heap usage: 96 allocs, 96 frees, 3,092 bytes allocated
11: ==27583==
12: ==27583== All heap blocks were freed -- no leaks are possible
13: ==27583==
14: ==27583== For counts of detected and suppressed errors, rerun with: -v
15: ==27583== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
```