

```

1  #include <iostream>
2  #include <string>
3  using namespace std;
4
5  class Name {
6  public:
7      Name() {}
8
9      Name(string name) {
10         this->name = name;
11     }
12
13     ~Name() {
14         cout << this->name << ": Destructor called." << endl;
15     }
16
17     string getName() const {
18         return this->name;
19     }
20 private:
21     string name{ "N/A" };
22 };
23
24 void passByMove(const unique_ptr<Name> uPtr_M) {
25     cout << "@uPtr_M: " << uPtr_M << endl;
26     cout << "getName(): " << uPtr_M->getName() << endl;
27 }
28
29 void passByRef(const unique_ptr<Name>& uPtr_R) {
30     cout << "@uPtr_R: " << uPtr_R << endl;
31     cout << "getName(): " << uPtr_R->getName() << endl;
32 }
33
34 void passByShare(const shared_ptr<Name> sPtr_S) {
35     cout << "@sPtr_S: " << sPtr_S << endl;
36     cout << "getName(): " << sPtr_S->getName() << endl;
37     cout << "use_count(): " << sPtr_S.use_count() << endl;
38 }
39
40 Name* passByValue(const unique_ptr<Name> uPtr_V) {
41     cout << "@uPtr_V: " << uPtr_V << endl;
42     cout << "getName(): " << uPtr_V->getName() << endl;
43     return uPtr_V.get();
44 }
45
46
47 int main() {
48
49     cout << passByValue(make_unique<Name>("Goofy")) << endl;
50
51     unique_ptr<Name> uPtr{ make_unique<Name>("Mickey") };
52
53     passByRef(uPtr);
54     cout << "name_uPtr: " << uPtr << endl;
55
56     passByMove(move(uPtr));
57     cout << "name_uPtr: " << uPtr << endl;
58
59     uPtr = make_unique<Name>("Minnie");
60     shared_ptr<Name> sPtr{ uPtr.release() };
61     passByShare(sPtr);
62
63     cout << "END of Program" << endl;
64     return 0;
65 }

```

```
66  /* 16 lines
67  @uPtr_V: 010B4360
68  getName(): Goofy
69  Goofy: Destructor called.
70  010B4360
71  @uPtr_R: 010B4558
72  getName(): Mickey
73  name_uPtr: 010B4558
74  @uPtr_M: 010B4558
75  getName(): Mickey
76  Mickey: Destructor called.
77  name_uPtr: 00000000
78  @sPtr_S: 010B44C8
79  getName(): Minnie
80  use_count(): 2
81  END of Program
82  Minnie: Destructor called.
83  */
84
```