

Section 2.1 C++11

Rvalue References

```

class String
{
public:
    String(const std::string&); // Copy the contents of string.
};

class S
{
    String d_s; // Implementation changed.

public:
    S(std::string s) : d_s(std::move(s)) { } // Implementation did not change.
};

std::string getStr();

int main()
{
    std::string lval;

    S s1(lval); // 2 copies
    S s2(getStr()); // 1 move and 1 copy
}

```

The problem is that now we are copying the **argument** twice: once into the `lval` parameter and then again into the `String` data member, `d_s`. Had we written the requisite overloads, we would not be in this situation:

```

class S
{
    String d_s;

public:
    S(const std::string& s) : d_s(s) { }
    S(std::string&& s) : d_s(std::move(s)) { }
};

```

So, unless we are absolutely certain that we will never change the implementation of our class, designing a constructor to take a **sink argument** by value can be suboptimal.

Disabling NRVO

Named return value optimization (NRVO) can occur only if the **expression** being returned from all paths through the function is the name of the same local **variable**. If we use `std::move` in a **return statement**, we are returning the return value of another function, i.e., `std::move`, and not a local **variable** by name, even though as developers we know that