Rule of DesDeMovA

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Cevelop
Your C++ deserves it

HSR
HOCHSCHULE FÜR TECHNIK
RAPPERSWIL
FHO Fachhochschule Ostschweiz

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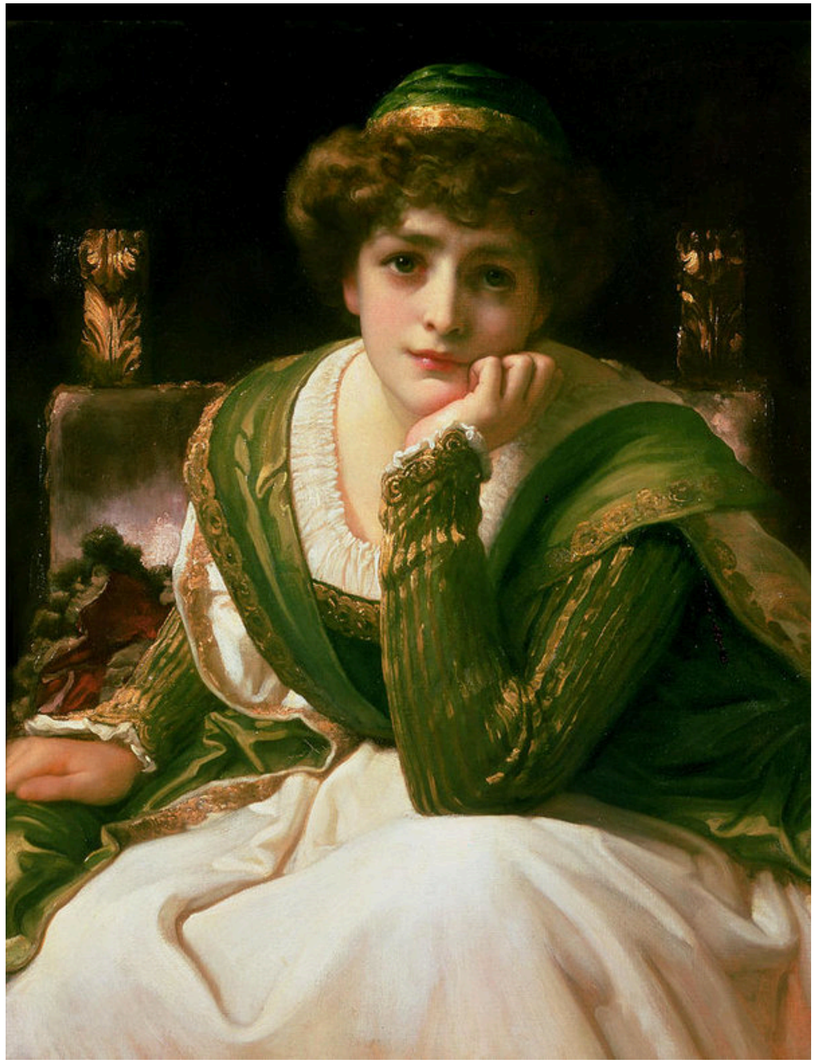
- **Wikipedia says:**
  - Desdemona (/ˌdɛzdəˈmoʊnə/) is a character in William Shakespeare's play Othello (c. 1601–1604).
  - The name derives from Greek δυσ + δαίμων, which means "ill-fated, unfortunate"
  - When deciding on which and how to implement C++ class special member functions, many classes become "ill-fated, unfortunate"
  - Do not be like Desdemona, use DesDeMovA !



Do you Remember: What Special Member Functions Do You Get?

What you get

What you write	default constructor	destructor	copy constructor	copy assignment	move constructor	move assignment
nothing	defaulted	defaulted	defaulted	defaulted	defaulted	defaulted
any constructor	not declared	defaulted	defaulted	defaulted	defaulted	defaulted
default constructor	user declared	defaulted	defaulted	defaulted	defaulted	defaulted
destructor	defaulted	user declared	defaulted (!)	defaulted (!)	not declared	not declared
copy constructor	not declared	defaulted	user declared	defaulted (!)	not declared	not declared
copy assignment	defaulted	defaulted	defaulted (!)	user declared	not declared	not declared
move constructor	not declared	defaulted	deleted	deleted	user declared	not declared
move assignment	defaulted	defaulted	deleted	deleted	not declared	user declared

Howard Hinnant's Table: https://accu.org/content/conf2014/Howard_Hinnant_Accu_2014.pdf
Note: Getting the defaulted special members denoted with a (!) is a bug in the standard.

Rule of Zero: rely on compiler-provided defaults!

What you get

What you write	default constructor	destructor	copy constructor	copy assignment	move constructor	move assignment
nothing	defaulted	defaulted	defaulted	defaulted	defaulted	defaulted
any constructor	not declared	defaulted	defaulted	defaulted	defaulted	defaulted
default constructor	user declared	defaulted	defaulted	defaulted	defaulted	defaulted
destructor	defaulted	user declared	defaulted (!)	defaulted (!)	not declared	not declared
copy constructor	not declared	defaulted	user declared	defaulted (!)	not declared	not declared
copy assignment	defaulted	defaulted	defaulted (!)	user declared	not declared	not declared
move constructor	not declared	defaulted	deleted	deleted	user declared	not declared
move assignment	defaulted	defaulted	deleted	deleted	not declared	user declared

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Making a OO base class T non-copyable: T& operator=(T&&) noexcept=delete;

What you get

What you write	default constructor	destructor	copy constructor	copy assignment	move constructor	move assignment
nothing	defaulted	defaulted	defaulted	defaulted	defaulted	defaulted
any constructor	not declared	defaulted	defaulted	defaulted	defaulted	defaulted
default constructor	user declared	defaulted	defaulted	defaulted	defaulted	defaulted
destructor	defaulted	user declared	defaulted (!)	defaulted (!)	not declared	not declared
copy constructor	not declared	defaulted	user declared	defaulted (!)	not declared	not declared
copy assignment	defaulted	defaulted	defaulted (!)	user declared	not declared	not declared
move constructor	not declared	defaulted	deleted	deleted	user declared	not declared
move assignment	defaulted	defaulted	deleted	deleted	not declared	user declared

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Note: Getting the defaulted special members denoted with a (!) is a bug in the standard.

Rule of DesDeMovA: T& operator=(T&&) noexcept=delete;

DesDeMovA

Rule of if
Destructor defined
Deleted
Move **A**ssigment

What you write

	default constructor				move constructor	move assignment
nothing	defaulted				defaulted	defaulted
any constructor	not declared				defaulted	defaulted
default constructor	user declared				defaulted	defaulted
destructor	defaulted	user declared	defaulted (!)	defaulted (!)	not declared	not declared
copy constructor	not declared	defaulted	user declared	defaulted (!)	not declared	not declared
copy assignment	defaulted	defaulted	defaulted (!)	user declared	not declared	not declared
move constructor	not declared	defaulted	deleted	deleted	user declared	not declared
move assignment	defaulted	user declared	deleted	deleted	not declared	=delete

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1. **Rule of Zero**
2. **Rule of DesDeMovA (no copy, no move for SBRM/RAII and OO-Base classes)**
3. **Rule of Unique Resource Managers (move-only, no copy)**
4. **Rule of Five for Resource Managers with Value Semantics, or other really special cases**