Programming in C++

Smart Pointers

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Objectives

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- Understand need for pointer management
- Understand syntax and semantics of `std::unique_ptr`
- Understand syntax and semantics of `std::shared_ptr`
- Understand syntax and semantics of `std::weak_ptr`

Need for Pointer Management

Heap memory: `new` and `delete`.

Uninitialized pointers

Memory leaks

Double deletes

dereference deleted pointer

shallow vs deep copies

multiple copies of a pointer (dangling pointer)

wild pointers (referencing unallocated locations)

pointer type mismatch