# IMGD 3000 - Technical Game Development I:
# Object-Oriented Development

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# Design Patterns

- ☐ The Interface
- ☐ The Singleton
- ☐ Object Factory

# The Interface

- In Java, we can specify a contract for a given class using *interfaces*
- C++ has no formal concept of this
- We can implement them using a class with:
  - No data members
  - All purely virtual functions
- Example from C4
  - Colliders

# The Singleton

- Sometimes we only want a single instance to exist for a given object
  - Game
  - Audio manager
  - Game-asset data manager
  - Different interface elements
- We can do this in C++ using a class with static member
- Examples from C4
  - TheWorld, TheGame, TheAudioManager
- Can be done generically using templates

# Object Factories

- There are many types of objects that are similar
- We don't know at compile time what they are
- Save and load should remain flexible
- How can we efficiently access them?
- Object Factories allow us to solve this type of problem
- Takes advantage of *polymorphism*