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HW08

1. The declaration, friend, gives access to a class’s private members. It’s only granted by classes that are willing to allow access to its private members. They can also grant access to specific functions.
2. It’s ideal to not use using namespace std*;* because there’s an increased risk of name collisions with other projects. Java packages have a convention for keeping package names of every project unique. C++ on the other hand doesn’t have that convention. Therefore, if two or more people use the same package name, name collisions come about. This statement should also not be put into the header file.
3. There are four ways to return objects to methods:
   1. Returning a reference to a Class Member: Works well for “get” methods. The only complication is that when calling the method, it returns the same object. Not really handy if one caller holds a reference to an object, and then someone calls the method. This changes the value of the held-onto variable unexpectedly.
   2. Returning a copy: Returns a new object completely separate from the data in the Class object. Caller can hold onto a result as long as they like. Only disadvantage is that the code can be made inefficient since it copies the object.
   3. Returning objects created on the heap: One problem is that the caller is forced to deal with heap data, and the memory management duties that come with it. Another is that the method allocates fresh memory wvery time the method is called.
   4. Using an argument: Pass a non-const reference to an existing object, in which the method is modified. The caller is responsible for all memory management decisions at this point.
4. The keyword mutable is used to mark class members (variables only) that can be modified inside of a const method.
5. A class can contain objects in C++ as an actual object, a reference, and as a pointer.
6. A singleton is a class that can only ever have one instance. While there are reasons to why singletons shouldn’t be used over the internet, it’s useful to create a singleton just in case a class with all static methods is created.