CMPUT 350 Lab 2 Prep Problems

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1. Type the following code into file `e1.cpp`, and implement `Bar`'s constructor, destructor, copy constructor, and assignment operator in `e1.cpp`. Also, define function `main()` that invokes `Bar`'s constructor, destructor, copy constructor, and assignment operator.

```
struct Foo {
    // details immaterial
};

struct Bar {
    Foo x;
    Foo *p;     // always pointing to 10 solely owned Foos
};
```

Test your program and make sure it doesn't leak memory (using valgrind). Your project must compile with

```
g++ -g -Wall -Wextra -Wconversion -Wsign-conversion -O -std=c++17 e1.cpp
```

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2. For classes `Foo`, `Bar` used in problem 1, create individual interface (`.h`) and implementation (`.cpp`) files `Foo.h`, `Bar.h`, `Bar.cpp`.

For this problem, interface files must not contain **ANY** method implementations. Also create file `main.cpp` that defines function `main()` which allocates 10 `Bar` objects on the heap and then frees them. Test your program and make sure it doesn't leak memory (using valgrind). Your project must compile with

```
g++ -g -Wall -Wextra -Wconversion -Wsign-conversion -O -std=c++17 Bar.cpp main.cpp
```