Name: _____

Today's Date: _____

Today's Goals

- Understand the structure of C++ code for defining and using classes.
- Identify where initialization and destruction are defined for instances of classes.

Today's Question(s)

What are the 5 stages of an object's lifetime?

Lingering Questions

What is still unclear after today's class?

Classes in C++

Goal: Be familiar with what classes look like, able to modify them.

Exercise: Examine Code

What's new/weird/unclear about this code?

main.cpp

```
/**
 * \file main.cpp
 * \author CS 70 Provided Code
 *
 * Creates and interacts with some Cows.
 *
 */

#include <iostream>
#include "cow.hpp"

using namespace std;

int main()
{
    Cow bessie{3, 12};
    Cow mabel{1, 2};

    // This line wouldn't work!
    // Cow duke;

    bessie.moo(1);
    mabel.moo(2);
    return 0;
}
```

cow.hpp

```
/* cow.hpp
 * interface definition for the Cow class.
 */

#ifndef COW_HPP_INCLUDED
#define COW_HPP_INCLUDED

#include <iostream>
#include <fstream>

/*
 * \class Cow
 * \brief Knows how many spots it has and how old it is. Can moo.
 */
class Cow {
public:
    // We can only have a Cow if we know how many spots it has and how old it is
    Cow(size_t numSpots, size_t age);
    Cow() = delete;

    // Moo the right number of times.
    void moo(size_t numMoos);
```

```
private:
    // The number of spots and an age can't be negative...
    size_t spots_;
    size_t age_;
};
#endif // ifndef COW_HPP_INCLUDED
```

cow.cpp

```
/**
 * \file cow.cpp
 * \author CS 70 Provided Code
 *
 * \brief Implements the Cow class
 *
 */

#include <cstddef>
#include <iostream>
#include "cow.hpp"

using namespace std;

Cow::Cow(size_t numSpots, size_t age)
    : spots_{numSpots}, age_{age}
{
    cout << "Made a cow with " << spots_ << " spots!" << endl;
}

void Cow::moo(size_t numMoos)
{
    for (size_t i=0; i < numMoos; ++i) {
        cout << "Moo! ";
    }
    cout << endl;
}
```