

Reasoning about derived classes:

```

derived-defaultCtor.cpp
1 class Sphere {
2   public:
3     Sphere(double d) { /* ... */ }
4 };
5
6 class Ball : Sphere() {
7
8
9 }
10
11 int main() {
12   Ball b;
13 }

```

Abstract Class:

1. [Requirement]:
2. [Syntax]:
3. [As a result]:

Reasoning about virtual classes:

```

virtual-ctor.cpp
15 class Sphere {
16   public:
17     virtual Sphere();
18 };
19
20 class Ball : Sphere() {
21   public:
22     _____;
23 }
24

```

```

virtual-dtor.cpp
15 class Sphere {
16   public:
17     virtual ~Sphere();
18 };
19
20 class Ball : Sphere() {
21   public:
22     _____;
23 };
24

```

In what order does the derived classes ctor/dtor get called?

Assignment Operator

I glossed over a crazy important detail of the assignment operator:

Consider the following program:

```

assignmentOpSelf.cpp
1 #include "Sphere.h"
2
3 int main() {
4   cs225::Sphere s(10);
5   s = s;
6   return 0;
7 }

```

```

Sphere.cpp
10 void Sphere::_destroy() { delete[] props_; }
11
12 void Sphere::_copy(const Sphere &other) {
13   r_ = other.r_;
14   props_max_ = other.props_max_;
15   props_ct_ = other.props_ct_;
16   props_ = new std::string[10];
17   for (unsigned i = 0; i < props_ct_; i++) {
18     props_[i] = other.props_[i];
19   }
20 }
21
22 Sphere& Sphere::operator=(const Sphere &other) {
23
24
25
26   _destroy();
27   _copy(other);
28   return *this;
29 }

```

Big Idea: Abstract Data Type

List ADT

Purpose	Function Definition

What types of List do we want?

Solution:

Function templates:

functionTemplate1.cpp	
1	
2	
3	T maximum(T a, T b) {
4	T result;
5	result = (a > b) ? a : b;
6	return result;
7	}

functionTemplate2.cpp	
1	
2	
3	T maximum(T a, U b) {
4	return (a > b) ? a : b;
5	}

Class templates:

List.h	
1	#ifndef LIST_H
2	#define LIST_H
3	
4	
5	
6	class List {
7	public:
8	
9	
10	
11	private:
12	
13	
14	};
15	
16	#endif

List.cpp	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

CS 225 – Things To Be Doing:

1. Exam #2 (Programming) begins on Monday
2. MP2 is due Sept. 25; Max EC w/ Part 1 by Sept. 18
3. Lab Extra Credit → Attendance in your registered lab section!
4. Daily POTDs