

The Class Construct – Part 1

Lecture 23

Sections 7.5 - 7.6

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- 1 The Class Construct
- 2 The `Point` Class Example
- 3 The Member Functions
- 4 Constructors
- 5 Assignment

Outline

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The Class Construct

The Class Construct

```
class name
{
    public:
        member-function-prototypes

    private:
        data-member-declarations
};
```

- The **class** construct has the above form.

The Class Construct

- Each member function appears as a prototype.
- Each data member appears as a declaration.
- The public part of the class construct describes the user interface.
- Note that the whole thing ends with a semicolon.

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Point Class Example

The Point Class

```
class Point
{
    // Data members

    private:
        double x; // x-coordinate
        double y; // y-coordinate
};
```

The Point0 Class

- Example

- `Point0.h`
- `Point0Test.cpp`

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The Member Functions

- For convenience, we categorize member functions as follows.
 - Constructors
 - The destructor
 - Inspectors
 - Mutators
 - Facilitators
 - Operators
 - Other member functions

The Member Functions

- A **constructor** is called when a new object is created. It initializes the object.
- The **destructor** is called when an object passes out of scope.
- An **inspector** returns an attribute of the object, but does not change the object.
- A **mutator** changes one or more data members of the object.

The Member Functions

- A **facilitator** is used to help implement an operator.
- An **operator** is a function that can be invoked through a symbol such as $+$ or $*$.
- The other member functions are the ones that do not fall into any of the previous categories.

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- A constructor's name *must* be the same as the class name.
- A class may have many constructors, each with a different signature.
- A constructor has no return type.
- A constructor is invoked by declaring an object of that type.

Point Class Example

The Point Class

```
class Point
{
    public:

    // Constructors

    Point();    // Default point (0, 0)
    Point(double xval, double yval); // Point (xval, yval)
    Point(const Point& p); // Copy of Point p
    :
};
```

The Point1 Class

- Example

- Point1.h
- Point1.cpp
- Point1Test.cpp

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Assignment

Assignment

- Read Sections 7.5 - 7.6.