**C++ Activities and Lecture Notes – Chapter 5**

**Objects and Classes and OOP, Oh My!**

What is OOD?

* Object oriented Design
* Designing object oriented programming

What is OOP?

* Object oriented programming

What is a primitive

* Identity –what it is and where it is
* state

What is an object?

* Identity –what it is and where it is
* State
* Behavior

Is an instance of a class.

What is a class?

* Recipe for an object

How are they related?

What are some of the characteristics of OOP?

polymorphism

Functions are polymorphic if they have same name and different parameter lists

encapsulation and data hiding

dynamic binding –

class do not automatically re-compile classes if/when adjusted

inheritance

parent/child

abstraction

simplify what they client needs to know

What is UML? – **Unified modeling language**

**Access to a class:**

public: public data and members are accessible from anywhere outside the class

private: private data and members cannot be accessed from outside the class

protected: protected data members can be accessed by “child” classes

**Member Functions of a class:**

**Constructors**

The *two* jobs of the constructor is to create an instance of the object and fully specify the

state of that new object.

Empty constructor – uses default values

Copy constructor – parameter is of the same type as the class; makes a “deep copy.”

C++ gives us a simple copy constructor for free.

Constructor job - instantiate and initialize object

**Destructors**

Destructors are called when an instance of a class is deleted.

Destructor job – remove the object

Any new statement must have a destructor (delete *object*)

**Accessors**

Accessors allow access to some or all of the state, usually through a copy

**Mutators**

Mutators allow alteration of the state of the object

**Members**

Member functions perform some operation that is specific to the class

**Friends**

Friend functions have access to private and protected members of a class.

**Inheritance in C++**

C++ supports multiple inheritance; a child can inherit from two or more parents. This turns out to be fiendishly complicated for both the programmer and the compiler authors and is not supported in most languages derived from C++. Java and C# support a limited form of multiple inheritance.

class ClockRadio: public Clock, public Radio{

**[A Simple Class Demo – Code Handouts and Class Demo Here]**