ADT/Templates/Basic Inheritance – Study Questions

- What is the difference between overloading and overriding a function?
- Can you override a function that is not a member function of a class?
- Write an example of a function with default arguments.
- When might it be ok to use friend functions?
- Write a new member function for the class `Bag`: ***`intersection`*** which returns a new `Bag` containing the elements found in both the `Bag` receiving the call to the method and the `Bag` that is the method's single argument. Define this method independently of the implementation, by using only the `Bag` ADT operations.
- Write **the interface** of a simple class `Polygon` with two integer private members `height_` and `width_` a parameterized constructor that takes two parameters `height` and `width,` and three public members: `int getHeight(); int getWidth;` and `double area();`
- Write the **interface and implementation** of two classes `Triangle` and `Rectangle` that **inherit** from `Polygon.` Thus `Polygon` is the base class and `Triangle` and `Rectangle` are two derived classes. Write the implementation for both the derived classes. Remember, the constructor is not inherited. You must override `area()` which is computed differently in each class. What about `getWidth()` and `getHeight()`?
- When would you declare class members as `protected`?
- What is the call order for Constructors with inheritance? For Destructors?
- When should a base class Constructor be called explicitly. Give a C++ example of how you would do that.
- What is an abstract class?
- What does `T` mean in `bool Bag<T>::add(const T& new_entry);`