Study Quiz #5

1. Given the classes at the bottom of the page, determine which of the declarations below are valid or invalid. If the declaration is valid, write **YES**, if the declaration is invalid, write **NO.** If it is invalid, explain why on the line below.

   a) _____ `Foo<int, 5> foo1;`

   _____

   b) _____ `Foo foo2(5);`

   _____

   c) _____ `Foo<int, B(5)> foo3;`

   _____

   d) _____ `Foo<A> foo4(B(5));`

   _____

   e) _____ `Foo<B, 5> foo6(5);`

   _____

   f) _____ `Foo<A(), 5> foo7;`

   _____

   g) _____ `Foo<> foo8;`

   _____

   h) _____ `Foo<A, 5> foo10;`

   _____

Classes used in question above

```
template <typename T1 = int, int T2 = 10>
class Foo
{
  public:
    Foo(int x = 0) { }
  private:
    T1 items[T2];
};

class A
{
  public:
    A() { }
};

class B
{
  public:
    B(int x) : x_(x) { }
    operator int(void)
    {
      return x_;
    }
  private:
    int x_;
};
```

2. What are the 3 major components of the Standard Template Library?

3. For each of the following operations, determine the time required to perform the operation *in the worst case*. If the time is Linear, write **L**. If the time is Constant, write **C**. If the time is Neither Constant nor Linear, write **N**.

   a) _____ Inserting an element at the front of an array.

   b) _____ Inserting an element at the front of a linked list.

   c) _____ Removing an element from the back of an array.

   d) _____ Finding an element in a linked list.

4. Given the 4 function prototypes below, which function will be called by the code in function **`fn`**? Write the letter associated with the function. If the code below is not valid, write **NC**.

```
void foo(char *);    // A
int foo(void);       // B
int foo(int);        // C
double foo(int);     // D

void fn(void)
{
  double d = foo(5);
}
```

14. Given a class named Fred, write the declaration (prototype) for its copy constructor. (*3 points*)

15. Given a class named Fred, write the declaration (prototype) for its assignment operator. (*3 points*)