Study Quiz #4 March 8, 2019

1. As a rule, if you use **`new`** or **`new[]`** in your constructor to allocate memory dynamically, you will need to implement three other methods to ensure your class is safe and works correctly. What are these three methods?

2. Name 4 implicit member functions that C++ automatically provides for a class (if you don't provide one.)

3. Given the class Hoo below, which methods of the class will the compiler generate for you? If the compiler generates the method, write **YES**, otherwise, write **NO**.

```
class Hoo
{
  private:
    int &x; // reference
};
```

   a) default constructor
   b) default destructor
   c) copy constructor
   d) conversion constructor
   e) assignment operator
   f) conversion operator

```
class Fred
{
  public:
    explicit Fred(int x);
  private:
    int x_;
};
```

4. Given the *Fred* class above, indicate whether or not the following statements compile. Write **C**, if the code compiles, and **NC** if it does not compile. If it doesn't compile, give a brief (one sentence) reason why.

   a) _____ `Fred *f1[] = {1, 2, 3};`
   b) _____ `Fred *f2[5];`
   c) _____ `Fred *f3 = new Fred(5);`
   d) _____ `Fred f4;`
   e) _____ `Fred f5[] = {1, 2, 3};`
   f) _____ `Fred *f6;`
   g) _____ `Fred f7[5];`

5. Given a class named *Foo,* give the proper prototype/declaration for the 3 methods listed below. You don't need to know anything about the *Foo* class to provide the prototypes.

   a) copy constructor
   b) copy assignment operator (`operator=`)
   c) output operator (`operator<<`)