ECE 417/617 Assignment #1

1. What is the output of the following program? Work out the solution by hand, then check with a computer.

```
#include <cstdio>

class Foo {
public:
     Foo() { printf("con1\n"); }
     Foo(int a) { printf("con2\n"); }
     Foo(const Foo& other) { printf("copycon\n"); }
     Foo& operator=(const Foo& other) {
          printf("assign\n");  return *this; }
     ~Foo() { printf("decon\n"); }
};

void main() {
     Foo f;
     {
          Foo g = f;
     }
     Foo h(f);
     h = f;
}
```

2. What is the output of the following program? Work out the solution by hand, then check with a computer.

```
#include <cstdio>

int a = 2;
double MyFunc(int a, int& b)
{
     printf("f1: %d %d\n", a, b);
     b *= 2;
     for (int i=0 ; i<2 ; i++) a += 3;
     printf("f2: %d %d\n", a, b);
     return a+b;
}

int main()
{
     int b=5;
     printf("m1: %d\n", (int) MyFunc(a,b));
     printf("m2: %d\n", (int) MyFunc(a,b));
     int a=3;
     printf("m3: %d\n", (int) MyFunc(a,b));
     return 0;
}
```

3. What is the output of the following program? Work out the solution by hand, then check with a computer.

```cpp
#include <cstdio>

int a = 5;

double MyFunc(int a, int* b)
{
    int& c = *b;
    printf("f1: %d %d %d\n", a, *b, c);
    *b *= 2;
    c += 3;
    printf("f2: %d %d %d\n", a, *b, c);
    return a + *b + c;
}

int main()
{
    int b=2, a=3;
    printf("m1: %d\n", (int) MyFunc(a,&b));
    printf("m2: %d\n", (int) MyFunc(::a,&b));
    printf("m3: %d\n", (int) MyFunc(a,&b));
    return 0;
}
```

4. What is the output of the following program? Work out the solution by hand, then check with a computer.

```cpp
#include <iostream>
using namespace std;

int Func(int a, int* b)
{
  a++;   *b *= 3;   return a*(*b);
}

class Time
{
public:
  Time() { printf("constructor\n"); }
  ~Time() { printf("destructor\n"); }
  int Func(int a, int* b) { return a * (*b); }
private:
  int hours, minutes, seconds;
};

int main ()
{
  int c = 2, d = 4, e(3);
  int f = Func(c, &d);
  printf("A:  %d %d %d\n", c, d, f);

  Time t;
  int g = t.Func(e, &e);
  printf("B: %d %d\n", e, g);
  cout << g << endl;

  Time* h = new Time;
  cout << "hello" << endl;
  delete h;

  return 0;
}
```

5. Read Gary Pollice's article, Teaching software development vs. software engineering, http://www.ibm.com/developerworks/rational/library/dec05/pollice Write a one-paragraph summary of the article.