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.

```cpp
#include <cstdio>

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

  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.

```cpp
#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.

```c
#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;
}
```

Write a one-paragraph summary of the article.