EECE.3220: Data Structures

Spring 2017

Lecture 34: Key Questions
April 24, 2017

1. Define inheritance, base class, and derived class.

2. How do we indicate that one class inherits from another? What information does the derived class inherit?

3. How are constructors handled with base and derived classes?

4. Given the `Manager` and `Employee` example classes shown below, how would you write each of the `Manager` constructors?

```
class Employee
{
private:
   string name;
   float payRate;
public:
   Employee();
   Employee(string n,
            float pr);
   string getName();
   float getPayRate();
   float pay(float
              hrsWorked);
};
```

```
class Manager:public Employee
{
private:
   bool salaried;
public:
   Manager();
   Manager(string theName,
   float thePayRate,
                bool isSalaried);
   bool isSalaried();
   void setSalaried(bool sal);
   float pay(float hrsWorked);
};
```

```
class Employee
{
private:
   string name;
   float payRate;
public:
   Employee();
   Employee(string n,
            float pr);
   string getName();
   float getPayRate();
   float pay(float
             hrsWorked);
};
```

```
class Manager:public Employee
{
private:
   bool salaried;
public:
   Manager();
   Manager(string theName,
             float thePayRate,
             bool isSalaried);
   bool isSalaried();
   void setSalaried(bool sal);
   float pay(float hrsWorked);
};
```

5. Describe the issues that might arise when writing the `Manager pay()` function. How can we resolve such issues?

```
class BClass {
protected:
   int var1;
private:
   int var2;
public:
   BClass();
   BClass(int v1,
          int v2);
   int sum();
};
```

```
class DClass : public BClass
{
private:
   int var3;
public:
   DClass();
   Dclass(int v1, int v2,
          int v3);
   int sum3();
};
```

6. Given the two classes above, which statements in the main program below cause compiler errors?

```
int main() {
    BClass b1(2,3);
    DClass d1(3,4,5);
    int a = b1.sum();
    int b = d1.sum();
    int c = d1.var1;
    int d = d1.sum3();
    int e = b1.sum3();
    return 0;
}
```