

## CS 271

### Worksheet on Inheritance

1. Base classes are usually more general than **derived** classes.
2. List the 3 types of inheritance in C++.

**public**  
**private**  
**protected**

3. Public inheritance represents the "**is-a**" relationship.
4. Give a suitable base class for a class named MiniVan. **Automobile**
5. List the 3 C++ access modifiers, in order from most restrictive to least restrictive.

**private**   **protected**   **public**

6. Here is the first line of a class definition for BasePlusCommissionEmployee.  
`class BasePlusCommissionEmployee : public CommissionEmployee`  
What does the **: public CommissionEmployee** indicate?

**BasePlusCommissionEmployee is a derived class of CommissionEmployee. The type of inheritance is public.**

7. Here is the header of the constructor definition for class BasePlus-CommissionEmployee.

```
BasePlusCommissionEmployee::BasePlusCommissionEmployee( string first,  
string last, string ssn, double sales, double rate, double salary )  
: CommissionEmployee( first, last, ssn, sales, rate )
```

what does the **: CommissionEmployee (first, last, ssn, sales, rate)** indicate?

**The CommissionEmployee constructor is called with 5 parameters.**

8. When an object of a derived class is instantiated, the **base class** constructor initializes the base class members.
9. True or False? Base class constructors and assignment operators are not inherited by derived classes. **True**
10. Suppose class A inherits from base class B. What is the order in which their constructors and destructors will be called when an object of class A is instantiated and then destroyed?

- **Class A constructor**
- **Class B constructor**
- **Class A destructor**
- **Class B destructor**

11. When deriving a class from a protected base class (protected inheritance) , the **public** members of the base class become **protected** and the **protected** members of the base class become **protected**.
12. In the following pairs of class names, designate which would be the base class and which would be the derived class.

- |                    |                |                  |                |
|--------------------|----------------|------------------|----------------|
| a. Student         | <b>base</b>    | Graduate Student | <b>derived</b> |
| b. Faculty         | <b>derived</b> | Employee         | <b>base</b>    |
| c. CheckingAccount | <b>derived</b> | Account          | <b>base</b>    |
| d. Event           | <b>base</b>    | Concert          | <b>derived</b> |