CSSE 220 – Object-Oriented Software Development
Rose-Hulman Institute of Technology

Worksheet 16

Name (Print):_____ Section:_____

1. Place access modifiers from most restrictive to least restrictive:

   _____

2. Identify the access modifier
   1) _____: available to any other class in the same package
   2) _____: can only be accessed within the declared class itself
   3) _____: can be accessed only by the subclasses in other packages or any class within the package
   4) _____: can be accessed from any other class (=everywhere)

3. Scope
   1) _____: anywhere in the object
   2) _____: anywhere in the class
   3) _____: within the method only
   1) _____: within the block

4. Select the correct statement about Abstract class:

   1) cannot be instantiated on its own
   2) can provide both abstract methods and implemented methods
   3) can only provide abstract methods
   4) constructors are allowed
   5) constructors are not allowed
   6) requires the keyword implements
   7) requires the keyword extends

5. Polymorphism is the ability for the same method call to behave _____ depending on the object's _____

6. Directions:

   1) Upcasting: _____

   2) Downcasting: _____

```
interface Top {
    public void alpha();
    public void beta();
    public void gamma();
    public void delta();
    // Note no epsilon here
}
```

```
class One implements Top {

    public void alpha() {
        System.out.println("A");
    }

    public void beta() {
        System.out.println("B");
    }

    public void gamma() {
        System.out.println("C");
    }

    public void delta() {
        System.out.println("D");
        this.beta();
    }
}
```

```
class Two extends One
        implements Top {

    public void beta() {
        System.out.println("E");
    }

    public void gamma() {
        super.gamma();
        System.out.println("F");
    }

    public void epsilon() {
        System.out.println("G");
    }
}
```

7.

Two m = new Two();
Top q = new One();
Top r = new Two();
One s = new Two();

Code	Output Choices (circle one in each problem)														*no output*	*runtime error*	*compile error*
`m.alpha();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				
`m.gamma();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				
`m.omega();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				
`q.alpha();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				
`r.beta();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				
`r.epsilon();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				
`s.beta();`	A	B	C	D	E	F	G	BE	CF	DB	DE	EB	FC				