1. Given these classes and interfaces, which of the following assignment statements are valid?

    abstract class BlueThing {...}
    interface Singer {...}
    class Smurf extends BlueThing implements Singer {...}
    class Turf extends BlueThing {...}
    class Professor implements Singer {...}

    • BlueThing b = new Smurf();
    • Singer s = new Singer();
    • Turf t = new BlueThing();
    • Singer s = new Smurf();
    • Smurf s = new Turf();
    • BlueThing[ ] things = new BlueThing[10];
    • Professor mv = new Smurf();

2. Given the following code, trace through a call of goodFun(4) on a Thing2 object.

    class CollideException extends Exception {...}
    class Thing1 {
        public void flyKiteIndoors(int speed) throws CollideException {
            if (speed > 4) throw new CollideException(“Oops.”);
        }
    }
    class Thing2 extends Thing1 {
        public void goodFun(int speed) {
            try {
                flyKiteIndoors(speed);
            } catch (Exception e) {
                cleanUpMess();
            } finally {
                System.out.printf(“I have a bad feeling about this.”);
            }
        }
        public void flyKiteIndoors(int speed) throws CollideException {
            super.flyKiteIndoors(speed + 1);
        }
        public void cleanUpMess() { }
    }
3. What is the order of each of the following growth functions?
   a. $10n^2 + 100n + 1000$
   b. $10n^3 - 7$
   c. $2^n + 100n^3$
   d. $n^2 \log n$

4. Determine the growth function and order of the following code fragment:

   ```java
   for (int c = 0; c < n; c++) {
       for (int c2 = 1; c2 < n*2; c2++) {
           System.out.println(c + " , " + c2);
       }
   }
   ```
5. Given the following code, answer the questions below.

```java
interface Speaker {
    public void speak();
}

class Dog implements Speaker {
    public void speak() { System.out.println(“Bark!”); }
}
class MediumDog extends Dog {
}
class SmallDog extends Dog {
    public void speak() { System.out.println(“Yip!”); }
}
class BigDog extends MediumDog {
    public void speak() { System.out.println(“WOOF!”); }
}
class Professor implements Speaker {
    public void speak(“Yada-yada-yada”);
}

Which of the following assignments is valid?

a. Dog d1 = new SmallDog();
b. MediumDog snoopy = new Dog();
c. Speaker s1 = new Professor();
d. Speaker[] speakers = new Speaker[5];
e. speakers[0] = new MediumDog();
f. Speaker s2 = new Speaker();
g. Dog d2 = new Professor();
h. Dog lassie = new BigDog();

What is the result of the following calls?

a. d1.speak();
b. speakers[0].speak();
c. lassie.speak();