1. What is difference between return, break and continue statement?

2. Given the following array declaration:
   ```java
   int [] a = new int [5000];
   ```

   What is the type of each of the following expressions?
   a. a.length
   b. a[4999]
   c. a

3. Consider the following code:
   ```java
   public class Super{
       public Super(){
           System.out.println("Super");
       }
   }
   public class Sub extends Super{
       public Sub(){
           System.out.println("Sub");
       }
   }
   ```

   What is the output when the statement below is executed?
   ```java
   Sub s = new Sub();
   ```

b. True or False: The statement below is a valid statement.
   ```java
   Object o = new Sub();
   ```
4. Consider the class below:

```java
class Mystery{
    private int x;
    private int[] data;

    public Mystery(){
        x = 3;
        data = new int[3]{1, 2, 3};
    }

    public void run() {
        f();
        k(data);
        x = data[0];
        System.out.println("x is " + x);
    }

    public void f() {
        x = x * 100;
        g(x);
        x = x + h(x);
        System.out.println("x is " + x);
    }

    public void g(int x) {
        x = x * 10;
        System.out.println("x is " + x);
    }

    public int h(int x) {
        x = x * 2;
        System.out.println("x is " + x);
        return this.x * 2;
    }

    public void k(int[] info) {
        info[0] = info[1] * 2;
        int x = info[0];
        System.out.println("x is " + x);
    }
}
```

What is printed when the following statements are executed? Show enough work to receive full credit.

```java
Mystery m = new Mystery();
m.run();
```
5. Consider the circuit below:

![Circuit Diagram](Figure 1)

Describe the output voltage $V_{out}$ when $R_a = 1\text{KOhm}$ and $R_b$ is:

a. Very small
b. Very large

6. In Figure 2, the voltage drop across $R_1$ =

a. $V_s$

b. $R_1$ times the current through $R_1$

c. Sum of the voltage drop across $R_2$, $R_3$, $R_4$

d. None of the above

e. Answers (a), (b), and (c)

![Figure 2](Figure 2)

7. Assume that the BoeBot is moving through a room and there are certain instances where it must wait for 4 seconds before it can do anything. What commands will you need to perform so that BoeBot does not perform any action for 4 seconds?