1. Consider the following class `Thing`, which, unfortunately, doesn’t properly override `equals`, but overloads it instead.

```java
class Thing {
    private int contents;
    public Thing(int value) { this.contents = value; }
    public boolean equals(Thing other) {
        return this.contents == other.contents;
    }
}
```

Now, here is a program that uses class `Thing`. After each `System.out.println` statement, indicate which `equals` method is called (Object.equals or Thing.equals), and whether the statement prints true or false. Circle the right choices.

```java
public static void main(String[] args) {
    Thing t = new Thing(17);
    Object o = t;
    Thing u = new Thing(17);
    System.out.println(t.equals(o));
    // method called: Object.equals   Thing.equals
    // output:  true  false
    System.out.println(t.equals(u));
    // method called: Object.equals   Thing.equals
    // output:  true  false
    System.out.println(o.equals(u));
    // method called: Object.equals   Thing.equals
    // output:  true  false
    System.out.println(u.equals(o));
    // method called: Object.equals   Thing.equals
    // output:  true  false
    System.out.println(u.equals((Thing) o));
    // method called: Object.equals   Thing.equals
    // output:  true  false
}
```

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2. Here is a small class with a correctly overridden equals method.

class Blob {
    private int size;  private int weight;  private String color;

    /** equality for Blobs. Two Blobs are the same
     * if they have the same size and weight. */
    @Override
    public boolean equals(Object o) {
        if (! (o instanceof Blob)) {
            return false;
        }
        Blob b = (Blob) o;
        return this.size == b.size && this.weight == b.weight;
    }
}

Below are five possible hashCode functions for Blob. For each one indicate if it is incorrect
(does not satisfy the specification for hashCode), or if it is correct but very poor, or correct
and adequate to good. Circle the right answers.

Hints: ^ is the exclusive-or arithmetic operation. Recall that if a.equals(b) is true, then
a.hashCode() must equal b.hashCode().

    public int hashCode() { return size; }
    
    Not correct  Correct but very poor  Correct and adequate to good

    public int hashCode() { return color.hashCode(); }
    
    Not correct  Correct but very poor  Correct and adequate to good

    public int hashCode() { return 42; }
    
    Not correct  Correct but very poor  Correct and adequate to good

    public int hashCode() {
        return size ^ weight ^ color.hashCode();
    }
    
    Not correct  Correct but very poor  Correct and adequate to good

    public int hashCode() { return size ^ weight; }
    
    Not correct  Correct but very poor  Correct and adequate to good