Quiz 3 Solutions

COMP 302 Winter 2020

All the questions pertain to the following Java code:

```java
class Upper {
  private int i;
  private String name;
  public Upper(int i){
    name = "Upper";
    this.i = i;}
  public void set(Upper n){ i = n.show();}
  public int show(){return i;}
}

class Middle extends Upper {
  private int j;
  private String name;
  public Middle(int i){
    super(i+1);
    name = "Middle";
    this.j = i;}
  public void set(Upper n){ j = n.show();}
  public int show(){return j;}
}

class Lower extends Middle {
  private int i;
  private String name;
  public Lower(int i){
    super(i+1);
    name = "Lower";
    this.i = i;}
  public void set(Lower n){ i = n.show();}
  public int show(){return i;}
}
```

```
class Tester {

  public static void main(String[] args){
    Lower a = new Lower(1);
    Middle b = a;
    Upper c = new Middle(5);

    System.out.println(a.show());
    System.out.println(b.show());
    System.out.println(c.show());

    a.set(c);
    b.set(a);
    c.set(b);

    System.out.println(a.show());
    System.out.println(b.show());
    System.out.println(c.show());

  }
}
```

1. What is printed as a result of the first occurrence of `System.out.println(a.show());`?

    (a) 1

    (b) 2

    (c) 3

    (d) 4

    Ans: (a)

2. What is printed as a result of the first occurrence of `System.out.println(b.show());`

    (a) 1

    (b) 2

    (c) 3

    (d) 5

    Ans: (a)

3. What is printed as a result of the first occurrence of `System.out.println(c.show());`

    (a) 1

    (b) 2

    (c) 3

(d) 5

Ans: (d)

4. What is printed as a result of the second occurrence of `System.out.println(a.show());`
after the `set` commands?

   (a) 1

   (b) 2

   (c) 3

   (d) 4

   Ans: (a)

5. What is printed as a result of the second occurrence of `System.out.println(b.show());`
after the `set` commands?

   (a) 1

   (b) 2

   (c) 3

   (d) 5

   Ans: (a)

6. What is printed as a result of the second occurrence of `System.out.println(c.show());`
after the `set` commands?

   (a) 1

   (b) 2

   (c) 3

   (d) 5

   Ans: (a)