CS 284: Quiz 2 – Spring 2020

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1. (3 pts)

```
1  public class Polymorphism {
2      private void show()
3      {
4          print("show parent");
5      }
6
7      public static void main(String[] args)
8      {
9          Polymorphism p=new privateMethod();
10         p.show();
11     }
12 }
13 public class privateMethod extends Polymorphism
14 {
15     public void show()
16     {
17         print("show child");
18     }
19 }
```

What is the result of executing the code above (1 pt)?

Explain your answer (2 pt):

1

2. (2pt)

```java
public class Polymorphism {
    private void show()
    {
        print("show parent");
    }
}
public class privateMethod extends Polymorphism
{
    public void show()
    {
        print("show child");
    }

    public static void main(String[] args)
    {
        Polymorphism p=new privateMethod();
        p.show();
    }
}
```

What is the result of executing the code above (1 pt)?

Explain your answer (1pt).

3. (2 pts) What are the two important differences between an abstract class and an actual class (1pt)? What are their similarities (1pt)?

4. (1 pt) Can a subclass (e.g., Laptop) object access a *private* method in the parent class (e.g., Computer)? Can it access a *protected* method in the parent class?

```
1  public class A {
2
3     private String this_password;
4
5     public A(String password) {
6        this.this_password = password;
7     }
8
9     public String get_password() {
10        return this.this_password;
11     }
12
13     public void set_password(String password) {
14        this.this_password = password;
15     }
16  }
17
18  public class B extends A {
19
20     public B(String password) {
21        super(password);
22     }
23  }
24
25  public class PasswordChecker
26  {
27     public boolean check_password(B b) {
28        if (b.get_password() == "goducks")
29           return true;
30        else
31           return false;
32     }
33
34     public boolean check_password(A a) {
35        if (a.get_password() == "goducks")
36           return true;
37        else
38           return false;
39     }
40
41     public static void main(String[] args) {
42        A password_a = new A("goducks");
43        B password_b = new B("gowildcats");
44        PasswordChecker c = new PasswordChecker();
45
46        System.out.println(c.check_password(password_a));
47        System.out.println(c.check_password(password_b));
48     }
49  }
```

Can you optimize the code from Line 27 through Line 39 such that: (1) the LOC is reduced (i.e., shorter than 13 lines); (2) the execution results from Line 42 through Line 47 remain the same. Write down your (reduced) code for replacing Line 27 through Line 39: