

cs165 Dynamic binding and casting worksheet

Given classes Book and Dictionary

```
public class Book {
    protected String name;
    public Book(String name){
        this.name = name;
    }
    public String motto(){
        return this + ", a good book!";
    }
    public String toString(){
        return "Book: " + name;
    }
}

public class Dictionary extends Book {
    private int defs;
    public Dictionary (String name, int defs){
        super(name);
        this.defs = defs;
    }
    public String toString(){
        return super.toString() + ", Dictionary: " + defs +
            " definitions";
    }

    public String Lookup(String word) {
        return word + " not found";
    }
}
```

1. Draw the class hierarchy

2. In a client class words:

```

public class Words {
    public static void main(String[] args) {
        Dictionary webster = new Dictionary("Webster",1000);
        Book alice = new Book("Alice in Wonderland");

        // what is printed here:
        System.out.println(alice.motto()); //: _____

        // what is printed here:
        System.out.println("WATCH IT: "+webster.motto());
        // _____

        // Is this valid?  _____
        alice = webster;

        // Is this valid?  _____
        alice.Lookup("rockingHorseFly");

        // Why is this invalid?  _____
        Dictionary d1 = alice;

        // How can it be fixed?  _____
        Dictionary d1 = _____

        // Assuming d1 is fixed above, is this valid?  _____
        d1.Lookup("horsefly");

        Book b2 = new Book("The Art of Computer Programming");

        // This compiles. What happens at run time?  _____
        Dictionary d2 = (Dictionary)b2;
    }
}

```