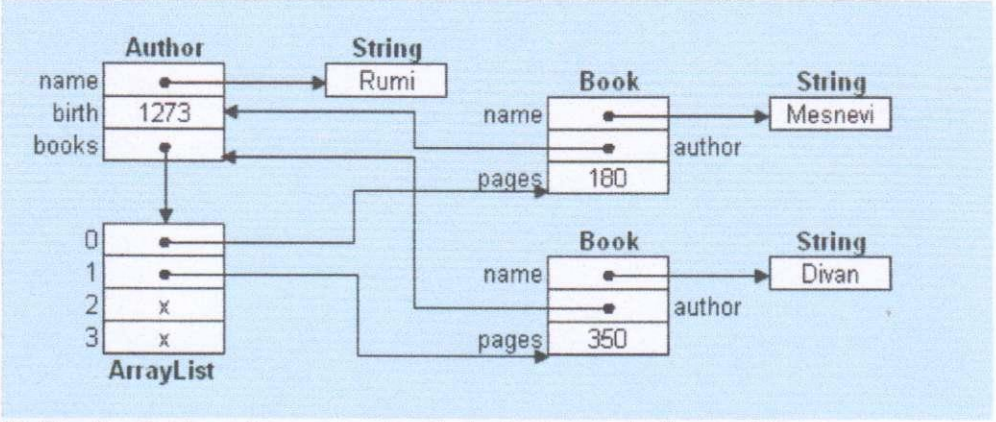
**BLM 305** Quiz Oct 27, 2016

(Duration: 25 minutes. One page of notes are allowed. No exchange of materials)

Consider the simplified object diagram shown below




a) Define the fields and a constructor for both classes Author and Book

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```
class Author {
    String name; int birth;
    List<Book> books;
    Author(String n, int b) {
        name=n; birth=b;
        books=new ArrayList<Book>();
    }
    public void addBook(Book b) {...}
}
```

books.add(b)

```
class Book {
    String name;
    Author author; int pages;
    Book(String n, Author a, int p) {
        name=n; pages=p; author=a;
        a.addBook(this);
    }
}
```

b) Write down three statements that generate values in the object diagram shown
Use the appropriate constructors and the `addBook` method defined above

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```
Author a= new Author("Rumi", 1273);
new Book("Mesnevi", a, 180);
new Book("Divan", a, 350);
```

c) Draw a more accurate object diagram for the Author's name using the String class below

```
public interface Comparable<T> { int compareTo(T o) }
public final class String implements Comparable<String> {
    private final char[] value;
    private int hash;
    //constructors and methods
}
```

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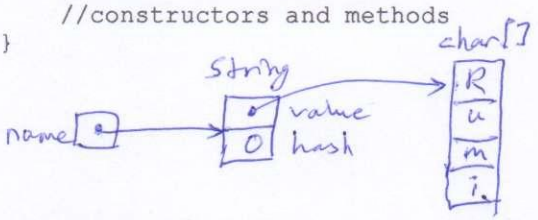


d) What makes a String object `Comparable`? What is the use of being `Comparable`?

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compareTo(String t) can be used in TreeSet & TreeMap

Quiz 2014 Oct 23, 2014

(Duration: 25 minutes. One page of notes are allowed. No exchange of materials)

Consider two class declarations below for all questions:

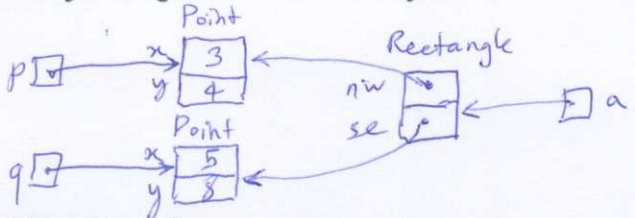
```
class Point {
    //Cartesian coordinates
    int x, y;
    Point( int a, int b ) {
        x=a; y=b;
    }
    public String toString() {
        return "("+x+","+y+")";
    }
}
```

```
class Rectangle {
    //north-west and south-east corners
    Point nw, se;
    Rectangle( Point a, Point b ) {
        nw=a; se=b;
    }
    public String toString() {
        return nw+":"+se;
    }
}
```

1. Complete the constructors above so that the following code is correct.

```
Point p = new Point(3, 4);
Point q = new Point(5, 8);
Rectangle a = new Rectangle(p, q);
```

2. Draw an object diagram for the three objects defined above.




3. Predict the output of `System.out.println(a);`

(3,4):(5,8)

4. Show how to make an object c of type `Collection<Point>` and how to add p, q into c.

```
Collection<Point> c = new ArrayList<>();
c.add(p); c.add(q);
```

5. Consider `TreeSet<Point> t`. Why do you get an exception when `t.addAll(c)` is invoked?

Point is not Comparable