Extra Lab Sheet 7:
Constructors, Arrays and ArrayLists

The following exercises are based on `Book` class of last week's Exercise 3 (Lab Sheet 5).

The source-code of all exercises will be available to you after the end of the today's lab.

Exercise 1

Perform the following changes to `Book` class:

- ISBN attribute is only set once (and can never change) when creating a `Book` object. *(Hint: Use of Constructor)*
- Title and Author attributes are also set when creating a `Book` object, but can be changed later.

Exercise 2

In `TestBook.java` main method, create an array of five `Book` objects and add the two Java books at position 0 and 1 of the array.

Try to print position 2 of the array. *What is this "`null`"?*

Exercise 3

Replace the array you created in Exercise 2 with an ArrayList. Finally, print all books that the array list contains.

Hint 1: Don't forget to add "`import java.util.*;`".

Hint 2: Check how an ArrayList is used in the lecture notes available in QM+.

Exercise 4

Create a `Bookshelf` class that uses an ArrayList to store `Book` objects. The size of the bookshelf (maximum number of books that it can store) is defined when initialising the object. If a size is not specified, a default value of 10 is set.

A Bookshelf should also support the following three operations:

- `void printBooks()`
- `void addBook(String isbn, String title, String author)`
- `Book findBookWithIsbn(String isbn)`

If the bookshelf is full and you try to add another book, the class should print an error message. When you search for a book that is not available, the class should return "`null`" using the command "`return null;`". Otherwise, it should return the correct `Book` object.

Create `TestBookshelf` class and test the implementation in its main method. (You don't need a `TestBook` class anymore)