Programming Lab Exercise 9

Before you start:
Create a folder called **lab9** inside your personal **java** folder you created at the start.
Save all your work for lab9 in this folder.

Purpose:
Tests your understanding of the concept of interfaces and inheritance in Java.

Q1.

a) Implement a Java interface called `LoanItem` which has one method called `calculatePrice()`.

b) Create a class called `LibraryItem` which contains the following attributes: `String type, String ID`.

c) Create a subclass of `LibraryItem` called `Book` which contains the following attributes: `String author, String title, int numPages`

d) Create a subclass of `LibraryItem` called `CD` which contains the following attributes: `String band, String title, int numTracks`

e) Both `Book` and `CD` should implement the `LoanItem` interface (devise your own `calculatePrice` implementation).

f) Create a driver program which creates an array of `LibraryItems` and demonstrates the creation of at least one `Book` and `CD` object in the array and calls `calculatePrice` on both.

Q2.

g) Implement a Java interface called `ImportDuty` which has two attributes const CARTAXRATE = 0.10 and const HGVTAXRATE = 0.15 and one method called `calculateDuty()`.

h) Modify the `RoadVehicle`, `Car` and `HGV` classes from the Inheritance labs so that they implement the `ImportDuty` interface. The tax rates from the interface should be used.

a) Create an appropriate driver to class to demonstrate the functionality.