# Question 5

A local government treasury department is designing software to work out the total yearly tax due on properties in the area. Since there are different rules for taxing residential properties (houses) and commercial properties (shops), it was decided to introduce a hierarchy of classes. At the top is the `Property`, which holds the owner's name and the estimated property value (these are passed as constructor's parameters). There are two subclasses, `House` and `Shop`, derived from `Property`. Each house is assigned a band, depending on its value: the band is 0 if the value does not exceed 100000, 1 if it is between 100000 and 500000, and 2 if it exceeds 500000. The tax payable on a house is computed as `value*(r1 + r2*band)`, where `r1` and `r2` are two `double` numbers passed as constructor's parameters. The tax payable on a shop is computed as `value*r`, where `r` is a `double` number passed as constructor's parameter.

(i) Implement a `Property` class. [3 Marks]

(ii) Implement a `House` class, including a method called `houseTax`, which returns the tax payable on that house. [8 marks]

(iii) Implement a `Shop` class, including a method called `shopTax`, which returns the tax payable on that shop. [6 marks]

(iv) Write a method called `totalTax`, which takes as parameters two `ArrayLists`, one containing houses and the other containing shops, and returns the total tax payable on all these properties. [8 marks]