CPE372
Object Oriented Analysis and Design
Quiz 4

ANSWERS

Study the class hierarchy on the next page, which provides a simplified view of how companies operate in Thailand.

Different laws govern different types of companies. In particular, the rules about how the company must dispose of its assets when the company is closed depend on whether the company is a domestic corporation, a foreign corporation or a sole proprietorship (an unincorporated company owned by one person). Also, there are limits on foreign shareholding in a foreign company (49% foreign ownership or less). A sole proprietorship does not have directors, capitalization or shareholders.
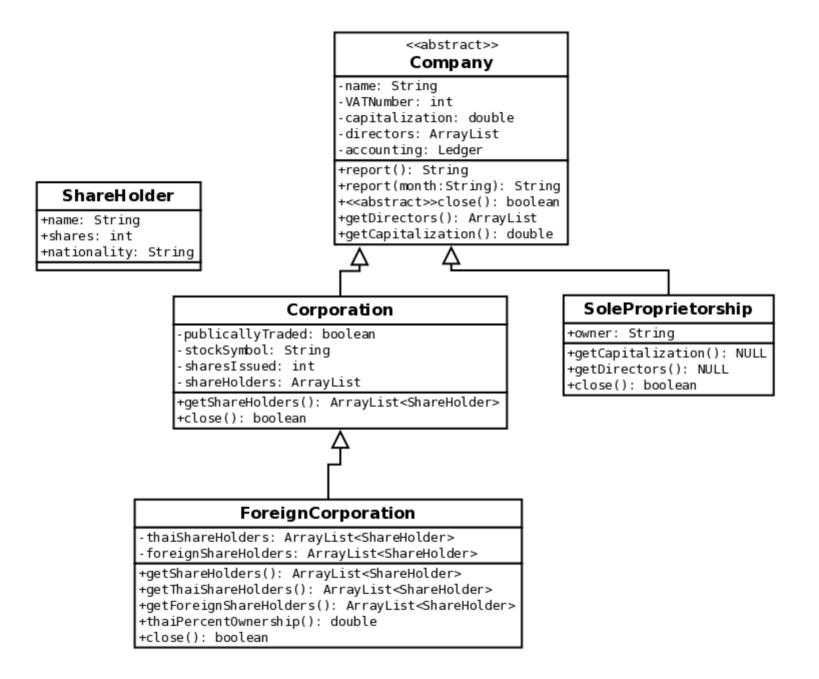
1. In this hierarchy, are there any examples of **overloading**? If yes, list the method name(s) and the class(es) involved below. (If there are multiple examples, only mention one.) If there is no overloading, write "NONE". (3 points)

   The *report* method in the class *Company* is overloaded. It has two versions, one which reports the whole year and one which reports a single, specified month.

2. In this hierarchy, are there any examples of **overriding**? If yes, list the method name(s) and the class(es) involved below. If there is no overriding, write "NONE". (3 points)

   --The *ForeignCorporation* class overrides the *close* method from the *Corporation* class.
   -- The *ForeignCorporation* class overrides the *getShareHolders* method from the *Corporation* class.
   -- The *SoleProprietor* class overrides *getDirectors* and *getCapitalization* from the *Company* class.

3. In this hierarchy, are there any examples of **polymorphic methods**? If yes, list the method name(s) and the class(es) involved below. If there is no polymorphism, write "NONE". (3 points)

   The *close* method is polymorphic in all subclasses of the abstract *Company* class.

<>
Company

-name: String
-VATNumber: int
-capitalization: double
-directors: ArrayList
-accounting: Ledger

+report(): String
+report(month:String): String
+<>close(): boolean
+getDirectors(): ArrayList
+getCapitalization(): double

ShareHolder

+name: String
+shares: int
+nationality: String

Corporation

-publicallyTraded: boolean
-stockSymbol: String
-sharesIssued: int
-shareHolders: ArrayList

+getShareHolders(): ArrayList<ShareHolder>
+close(): boolean

SoleProprietorship

+owner: String

+getCapitalization(): NULL
+getDirectors(): NULL
+close(): boolean

ForeignCorporation

-thaiShareHolders: ArrayList<ShareHolder>
-foreignShareHolders: ArrayList<ShareHolder>

+getShareHolders(): ArrayList<ShareHolder>
+getThaiShareHolders(): ArrayList<ShareHolder>
+getForeignShareHolders(): ArrayList<ShareHolder>
+thaiPercentOwnership(): double
+close(): boolean