# Domain Models
(In Class Activity)

Task 1 (Partial) Computer Domain Model

- Make a UML class diagram whose classes correspond to the main parts of a computer: CPU, monitor, keyboard, RAM and disk drive).
- Your diagram should include at least one attribute for each class.
- Add associations and multiplicities corresponding to the connections among these parts.
- Start by identifying candidate nouns in the description.

Computer Domain Model
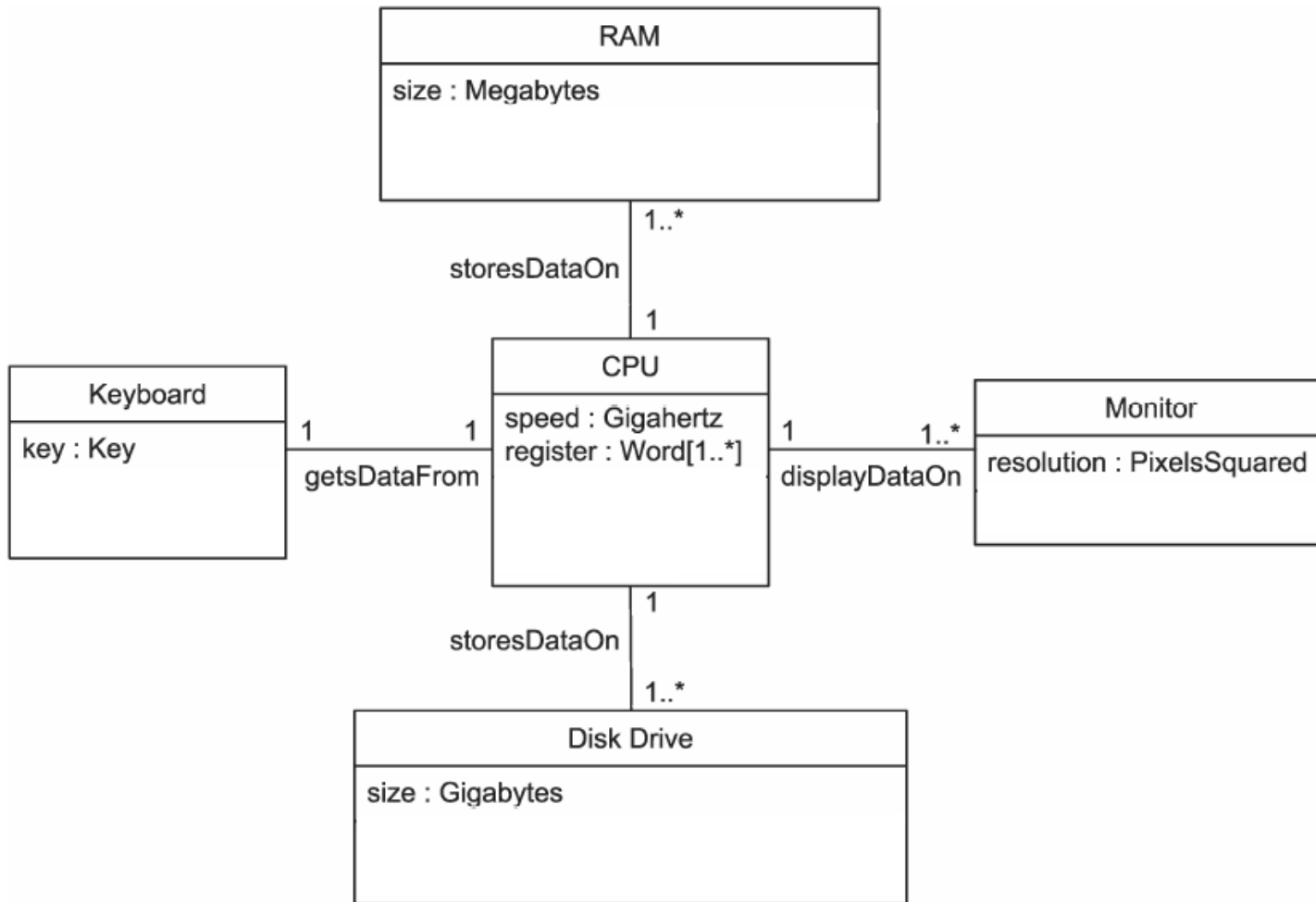
Arboretum

An **arboretum** is a specially designed garden of different types of plants.

An arboretum has extensive plantings that must be maintained and monitored. An Arboretum System keeps track of all plant stocks, the location and value of each, and the contributors who supplied the funds to purchase them.

The arboretum has dozens of beds of varying shapes and locations. The layout of the arboretum is maintained in a map database that records the shapes of all beds and the contents and locations of all plantings in each bed. Gardeners may redraw the beds when they are changed.

Whenever a plant is purchased, its species, color, size, value, donator, and annularity (perennial or annual) is recorded. Its location (bed or greenhouse) is also recorded. Plants are removed from the database when they die. Assume that a particular map of an arboretum has zero or one greenhouse and zero or many beds.
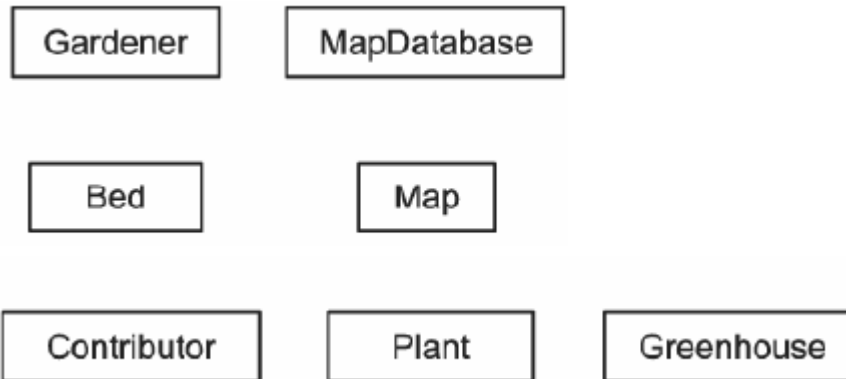
Task 2.1

Make a list of noun phrases in the Arboretum System and use them to produce a draft domain model of this problem.

- Your first draft should include only concept classes (and not attributes and associations).
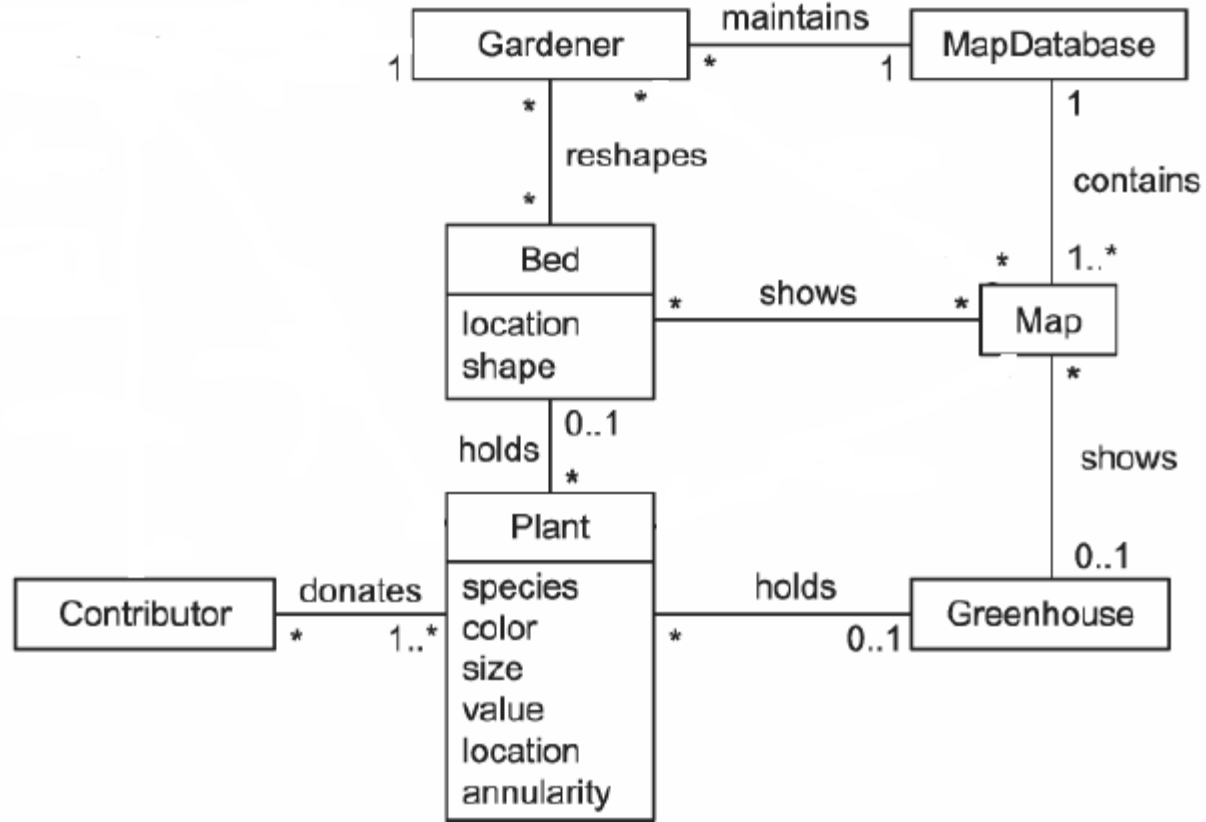
Classes (Concepts)

Gardener   MapDatabase

Bed   Map

Contributor   Plant   Greenhouse

Task 2.2

Add attributes, associations including names, and multiplicities to the draft you produced for the Arboretum System

Arboretum

Task 2.3

Extend diagram to use two generalizations in your domain model:

- Contributor can be either an Entrepreneur, Lawyer, Doctor, Engineer or Military Officer.
- Plant is delivered by a Vehicle, which is either a Track, Pickup , SUV or Wagon.

Is the "100%" test and "is-a" test true in this cases. Provide justification.

Should contributor and vehicle be an abstract or non-abstract class? Ensure to use the proper notation.

Task 2.4

- Add a conceptual class(es) of your choice that model properly aggregation. For instance, vehicle has multiple wheels (from 4 to 8).
  - Choose properly between composite aggregation and shared aggregation.
- Assume Contributor can be hired in multiple Companies. Add an *association class* for relationship between Contributor and Company that includes the salary of the contributor.
- Use *reflexive association* with roles to model that Contributor can be married to another Contributor.
- Extend the design model to include *changing states*.
  - Vehicle can be in "serviced" and "non-serviced" state.