

Worksheet Eight

There are of course many problems connected with life, of which some of the most popular are "Why are people born?", "Why do they die?" and "Why do they spend so much of the intervening time wearing digital watches?".

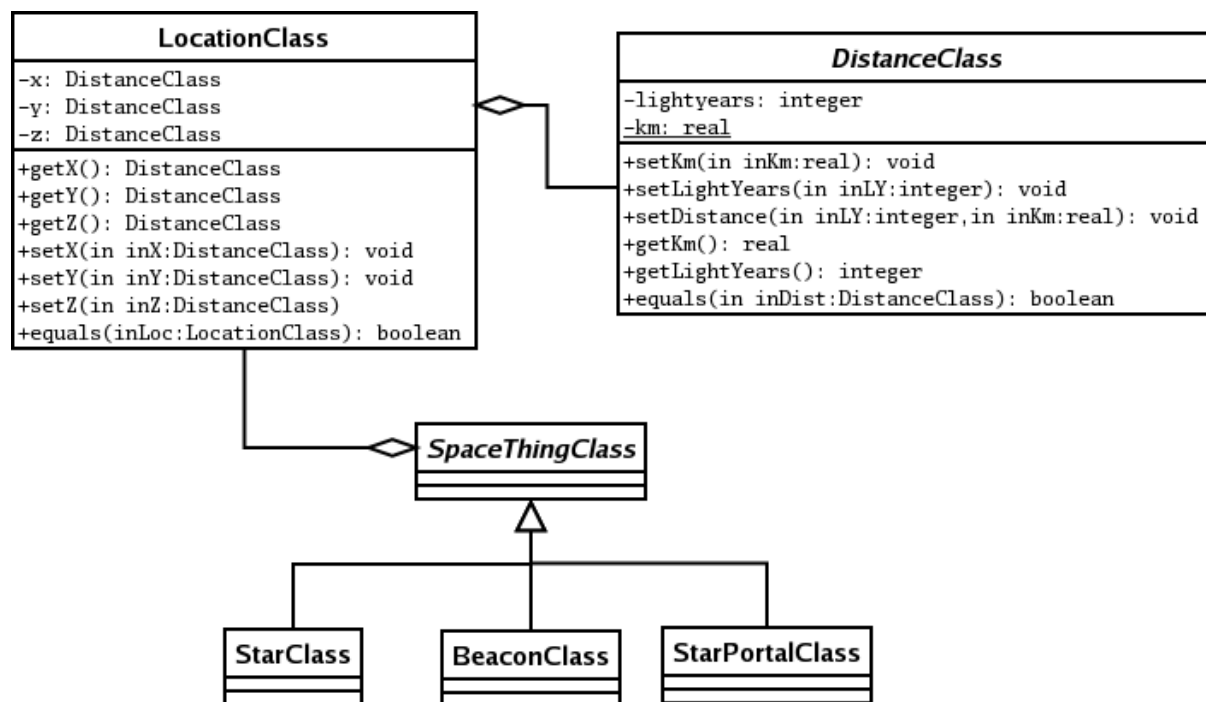
Douglas Adams, The Hitch Hikers Guide to the Galaxy 1979

Unit Learning Outcomes Addressed by this worksheet: 1, 2, 3 & 4

Make electronic copies of all of your algorithms. Place these, along with your Java code, in your P08 directory.

Exercise One

The UML class diagram below describes a set of classes to be used in the star portal navigation software. Your tutor will explain the UML diagram to you so listen carefully. Two of the classes (DistanceClass and LocationClass) you have designed and implemented in worksheet seven.



Use the information below (in addition to the Class diagram on the previous page) to design the remaining three classes.

All of the classes should have the same categories of constructors, accessors and mutators as **DistanceClass** and **LocationClass**. You will need to think carefully about the issues that arise due to the inheritance relationship. For example, what can you conclude by observing that the aggregation relationship shared between **LocationClass** and **SpaceThingClass**?

StarClass:

Stars are described by their name (a character string), their location in space (look at the UML diagram carefully) and the number of years that they will remain in a safe state. Two stars are considered equal if they have the same name and location.

BeaconClass:

Beacons are described by a beacon identifier (an integer in the range 1000000 to 9999999), the date of their next scheduled service and their location in space. Two beacons are considered equal if they have the same beacon identifier and location.

StarPortalClass:

StarPortals are described by a portal identifier (the name of the sun they reside next to, followed by a dash, followed by an integer in the range 100 to 999), their location in space and the Slartibartfarst coefficient for that star portal (a real number, positive number). The Slartibartfarst coefficient is required for estimating the duration of a trip from one portal to another (see worksheet nine for details). Two star portals are considered equal if they have the same portal identifier and location.

Exercise Two

Translate your classes into Java and make sure that they compile.

Exercise Three

If you were to design a test harness which would test all of the public interfaces for all of the classes that you have designed and implemented in exercises two and three, what are the categories of testing required? What difficulties might you encounter?

Exercise Four

Design, in pseudo code a minimal test harness for the classes. Your test harness should simply demonstrate the basic functionality available via your classes.

Exercise Five

Translate your test harness into Java and compile and run your software.