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CS 445

Part 1.

Packets are sent from one location to another. Packets have a certain weight. Locations are characterized by their transportation facilities, e.g. railway stations, airports and highway connections. Some locations are neighbored, i.e. there exists a direct transportation route between these locations. The transportation route between the locations has a certain length, i.e. the distance between the locations. Planes, trains, and trucks are used for transportation; each plane / train / truck may load a maximum packet weight. For each packet we want to know where it is, i.e. at which location or transport (plane, train, truck).

Nouns:

Packets

Location

~~Weight~~ - attribute

~~transportation~~ ~~facilities~~  - a detail of locations

railway stations - a type of facility

airports - a type of facility

highway connections - a type of facility

transportation route

~~Length~~ - attribute

Transport - Superclass

Planes - Class

Trains - Class

Trucks - Class

Packet weight - Attribute

Part 3.

(i) The built-in Integer class is Final and thus cannot be extended.

(ii) If we allow a class to be extendable we might run into unexpected behavior in the overridden methods. This is because we cannot really predict the possible ways that the methods will be overridden. Thus we can prevent this behavior in a class like Integer by not making it extendable.

(iii) We can create a whole new class that specifically deals with hexadecimal, we can declare an integer object in this class so that we still get all the methods of the Integer class but we can add new methods if we want.