**Question C: Collections** *<12 marks>*

For each of the following scenarios, state which interface from the Collections framework (e.g., `Set`, `List` or `Map`) would be most appropriate.
In your answers, assume that parameterized types should be used. For example, instead of `Set`, the parameterized version, such as `Set<String>`, should instead be used.
State your assumptions and describe the issues that you considered in making your choice with respect to choice of which interface from the collection framework and the type chosen for the parameter (e.g, if your answer is `Set<String>`, state why you chose `Set` for the collection and why you chose `String` for the elements of the collection).

**C–1. [2 marks]** The collection of all the songs a particular band intends to play at their next concert.

List<String> if order does matter, or Set<String> if order doesn't matter but it isn't necessary to handle the case of duplicate songs

**C–2. [2 marks]** The collection of all the credit cards that are held by all of the students in the university. The goal in creating this collection is so that the total actual debt and potential debt of the entire student population can be determined. (Assuming for the moment that all privacy laws have been suspended).

if the assumption is that all cards are unique, then Set<CreditCard>. however, it may be that there are be multiple copies of a single card issued (e.g., siblings who have a card from their parents, in this case, a list may be better.

**C–3. [3 marks]** The collection of all observations about the vehicles that drove west on Steeles between 9am and 10pm today between Keele and Jane. The goal in creating this collection is so that it can be analyzed with respect to proportion of high-occupancy vehicles (more than three passengers) and low-occupancy vehicles (2 or fewer passengers). Assume the class `VehicleObservation` is defined to encapsulate all of the attributes about a particular observation that was made of a particular vehicle (e.g., its license plate, its speed, the time and intersection of entering Steeles, the time and intersection of leaving Steeles).

Set<VehicleObservation>, since each observation should be unique. all vehicles are uniquely identified by their license plate, but there can be multiple obervations of the same vehicles.

**C–4. [2 marks]** Building on question C–3, suppose we wanted to create a lookup table so that for any vehicle license plate, we could check the number of times it was observed travelling west on Steeles between Keele and Jane. What collection would you use?

Map<String,Integer>

**C–5. [3 marks]** Building on question C–3, suppose we wanted to create a lookup table so that for any vehicle license plate, we could determine all of its vehicle observations with respect to Steeles between Keele and Jane. What collection would you use?

Map<String,List<VehicleObservation>>