CSE 262: Quiz #3  
Due October 21st, 2022 at 11:59 PM

The quiz has TWO questions. Please submit your answer by updating this file in the quizzes folder of your Bitbucket account, and then committing and pushing. You should use as much space as you want for each answer. Please be detailed in your answers. Remember: this quiz is worth 9% of your grade, and you will not receive very many points if you do not give detailed answers.

**Question 1:** In class, we discussed that a compiler for a type-safe language *should* know the shape of its data structures. Using this claim as a starting point, study the JSON file format. Then investigate the Google Protocol Buffer format. How do they address the same problem? How do they address different problems? What are the strengths and weaknesses of each?

**Question 2:** Many modern languages have built-in vector and unordered map (hash table) data types, which are capable of holding arbitrary data types. For example, even before the Go language had proper generics, it still supported generic vectors and unordered maps. Other common data types (double-ended queues, lists, ordered maps, queues, stacks, priority queues, etc...) are not built in. There are many possible reasons. Using your knowledge of data structures and what you have learned in programming languages so far, give at least two reasons why these other data types are less likely to have first-class support. Use different data structures to support your first and second reasons.