Assignment 5.1

Part 1

Part 1: Answer the following in a Word or PDF document.

1. **Explain how a hash function is used.**
   1. A hash function is used by taking the search key and turning it into an integer, and the integer is mapped or hashed to the index.
2. **How might a string hash function be written?**
   1. Using the Unicode value of each character in the string and multiplying that value by a factor based on the character’s position, then adding the values up.
3. **Explain why we might choose to use a hash function rather than search for a key?**
   1. There might be multiple search keys with the same name, so utilizing a hash function will allow you to differentiate between the search keys.
4. **What hash function does the Java util HashMap use for hashing strings?**
   1. u0gn-1 + u1gn-2 + … + un-2g + un-1
      1. u = the uth character in the string
      2. g = the constant 31
      3. n = the length of the string so used to get the character’s position