1. Describe how you would write a function to find the intersection of two sets. Your solution should NOT use the built-in intersection method.
2. Describe how you would write a function to find the union of two sets. Your solution should NOT use the built-in union method.

Q1:

The overall approach of finding the intersection of 2 sets, would be iterating over 1 of the sets and checking if they exist in the other set. If an element exists in both sets, it is added into the result set, which is our intersection set.

We first initialize a hashset. Iterate over the smaller set and then use if-else conditions to see if an element exists in the other set. If it exists in the other set, add it into the hashset created earlier. In the end, display all the values in the hashset.

The performance is O(n), as there are no nested loops. A loop is used to iterate the initial set and another for the result set.

For example, a list with (1, 2, 3), and a list with (3, 4, 5), should return 3 as the intersected list. A list with nothing, and a list with (1, 2, 3) should return nothing. A list with (1, 2, 3), and a list with (2, 3, 4) should return 2 and 3 as the intersected list. 2 duplicate lists of (1, 2, 3) would return 1, 2, 3.

Q2:

The overall approach is very similar for a union set.

We first initialize a hashset. Iterate over both sets, retrieve all values from the sets and add them to the hashset created earlier. Since a hashset will not have any duplicate values, all the values from both sets, including the duplicates will only appear once in the hashset. In the end, display all the values in the hashset.

The performance is O(n), as there are no nested loops. 2 loops are used to iterate the initial sets and another for the result set.

For example, a list with (1, 2, 3), and a list with (3, 4, 5) should return 1, 2, 3, 4, 5 as the union list. A list with nothing, and a list with (1, 2, 3) should return 1, 2, 3. A list with (1, 2, 3), and a list with (2, 3, 4) should return 1, 2, 3, 4. 2 duplicate lists of (1, 2, 3) would return 1, 2, 3.