

Hashing Online - C1+C2

Hash tables can be used to perform a number of tasks quickly in practice. In this assignment, you are required to use your existing hash table implementation to support efficient set operations between two sets. Take as input two sets (Set A and Set B) of integers and compute and output the following set operations using the hash table you built earlier:

1. Intersection ($A \cap B$): numbers that appear in both sets.
2. Union ($A \cup B$): all unique numbers from both sets.
3. Difference ($A - B$): numbers in Set A that do not appear in Set B.

Your code should run in (expected) linear time.

In the input, the first line will contain the number of items in Set A. The second will contain the items in Set A separated by spaces. Similarly, the third and fourth lines will contain the number of items in Set B and the items in it.

The output should contain the intersection, union, and difference of the two sets in three lines with items separated by space (the order of the items does not matter).

Sample Input

```
40
48 97 15 29 27 50 26 8 77 5 74 64 81 70 7 83 2 79 92 80 60 96 86 35 71
65 38 36 17 6 21 41 91 23 76 45 93 40 39 75
40
94 36 32 61 1 65 46 16 82 21 28 78 48 35 13 66 39 57 4 53 12 89 43 24
42 26 92 74 47 45 73 14 62 95 30 96 17 54 11 97
```

Sample Output

```
Intersection: 17 21 26 35 36 39 45 48 65 74 92 96 97
Union: 1 2 4 5 6 7 8 11 12 13 14 15 16 17 21 23 24 26 27 28 29 30 32
35 36 38 39 40 41 42 43 45 46 47 48 50 53 54 57 60 61 62 64 65 66 70
71 73 74 75 76 77 78 79 80 81 82 83 86 89 91 92 93 94 95 96 97
Diff (A-B): 2 5 6 7 8 15 23 27 29 38 40 41 50 60 64 70 71 75 76 77 79
80 81 83 86 91 93
```