In social media research, we have “following & followers”. Data.txt displays the following relationship of 1,000 users of a social media. For example,

**10:[165, 200, 110]**

This record means that User10 is followed by User165, User200 & User110 on social media. Could you design a program to find all distinct pairs that the pair follows each other on social media? Please generate results to a text file in the following format:

**10-165**

**10-200**

**10-110**

**1:** The current data file displays the follower list of one user. Could you convert it to show the following list of each user in the same format? For example,

**10:[1, 3, 5, 7]**

it means User1, 3, 5, 7 is in User10’s following list.

**2:** There is a famous theory called six degrees of separation, which means any two people could make a connection in a maximum of six steps. Let’s assume Q2\_Data.txt displays the relation of “knowing”. For example,

**10:[165, 200, 110]**

This record means that User10 knows User165, User200 & User110. And User165 might know other users. So User10 could know a lot of people by six degrees theory. If there is anyone that User10 could not reach by six steps, we call the person “isolated island”.

Could you calculate for each user, how many “isolated islands” are there in the user group?

**3**: For now, we want to improve six degrees theory to N-degrees theory to make it applicable for our user group. Could you find the minimum N which could connect any two users in a maximum of N steps? Is there an existing N?

**data sample:**

1:[149, 426, 109, 167, 58, 40, 372, 142, 233, 581, 32, 996, 667, 747, 765, 642, 976, 203, 93, 536, 680, 972, 692, 983, 79, 218, 443, 521, 271, 871, 681, 651, 580, 219, 494]

2:[516, 707, 345, 167, 857, 370, 540, 419, 781, 262]

3:[794, 836, 353, 994]

4:[516, 419, 980, 447, 850, 788, 736]

5:[451, 276, 2, 420, 174, 972, 399, 232, 98, 239, 188, 210, 561, 778, 329, 400, 736, 175, 602, 781, 620, 173, 85, 506, 124, 192, 665, 587, 230, 233, 746, 516, 927, 535, 622, 156, 119, 201, 391, 144, 532, 496, 966, 796, 575, 823]

6:[873, 568, 199, 925, 397, 367, 793, 946, 774, 838, 197, 344, 9, 429, 978, 749, 56, 440, 348, 29, 968, 428, 919, 163, 929, 857, 240, 804, 170, 128, 777, 187, 165, 384, 449, 988, 552, 484, 532, 528, 720]

7:[240, 707, 866, 928, 222, 96, 339, 722, 871, 550, 986, 602, 716, 166, 216, 897, 250, 945, 832, 781, 200]……………………..