Programming Assignment 6 Requirements

* Program  
  You are required to implement two programs: (1) Floyd-Warshall Algo (2) An Application of Maximum Flow.
* Upload  
  Please upload your code to E3 as well as judge system.  
  On E3, place your code into a directory named [your student ID],  
  e.g.   
     0123456/hw6\_1.cpp   
     0123456/hw6\_2.cpp   
  then pack your code into an ZIP file. (Notice: Please make sure it is ZIP.)  
  On judge system, the problem number are 6-1, 6-2.
* Sample I/O

**Floyd-Warshall Algo**

Input

The input consists of a number of cases. You will be given a directed graph represented by a matrix. The first line is the size of the matrix, and the followed contains every row of the matrix. The letter i denotes an infinitely large number.  
Output

You need to print both a matrix of all shortest path lengths, and predecessors, and shortest paths for all ordered pairs of vertices.   
Sample Input  
5

0 3 8 i -4

i 0 i 1 7

i 4 0 i i

2 i -5 0 i

i i i 6 0

Sample output  
0 1 -3 2 -4

3 0 -4 1 -1

7 4 0 5 3

2 -1 -5 0 -2

8 5 1 6 0

0 3 4 5 1

4 0 4 2 1

4 3 0 2 1

4 3 4 0 1

4 3 4 5 0

1 to 2: 1->5->4->3->2

1 to 3: 1->5->4->3

1 to 4: 1->5->4

1 to 5: 1->5

2 to 1: 2->4->1

2 to 3: 2->4->3

2 to 4: 2->4

2 to 5: 2->4->1->5

3 to 1: 3->2->4->1

3 to 2: 3->2

3 to 4: 3->2->4

3 to 5: 3->2->4->1->5

4 to 1: 4->1

4 to 2: 4->3->2

4 to 3: 4->3

4 to 5: 4->1->5

5 to 1: 5->4->1

5 to 2: 5->4->3->2

5 to 3: 5->4->3

5 to 4: 5->4  
**An Application of Maximum Flow**

Input

The input consists of a number of cases. The first line consists of #paper, #reviewer, minimum number of assignments of each paper, maximum number of papers a reviewer can review. The followed lines consist of numbers of papers a reviewer want to review, paper ids.  
Output

You have to find maximum number of papers that can be validly assigned. (hint: model this problem using a s-t flow network G = (V, E) (a flow network with capacity labeling).  
Sample Input  
6 3 2 4

4 1 3 5 6

3 1 2 4

6 1 2 3 4 5 6

Sample output  
5