Southeastern European Regional Programming Contest
Bucharest, Romania
October 20, 2001

Problem D
Typography

Input File: D.DAT
Program Source File: D.PAS or D.C or D.CPP

The managers of a very large typography (with a virtually infinite number of resources – i.e. an infinite number and variety of printing machines) would like to know what is the minimum time required to fulfill a customer's order. An order is a request to print a certain number of magazines, or leaflets, or books etc. For each product that can be printed – there is a certain flow that must be followed. For example, first a machine takes single paper from a pile of paper, other machine cuts the paper to appropriate page dimensions, other machine prints one page, one collects the pages into a pile, and the last machine staples the pages together. Thus, the printing flow can be described by giving the **N** operations required, the time consumed for each operation, and the dependencies between the operations (e.g. operations 0, 1, and 2 may start immediately, 3 may start after 2 completes, 4 may start after 1 and 3 are completed, and 5 may start after 1 is completed, and 6 may start after 0, 4 and 5 are completed).

Your task is to write a program that computes the minimum time required to fulfill a customer's order. The program will read from the input file several data sets separated by an empty line - each data set represents a customer's order and has the following format:

- On the first line - the number **N** of operations required for printing a product (max. 100)
- On the following **N** lines – for each operation, we have (in this order) the operation's ID (between `0` and `N-1`), the time required for completing the operation (a strictly positive integer), the IDs of the operations that must start after the current operation is completed, and a terminator (the integer '-1').

For each data set (customer order), the program must write to the standard output a single line containing the time required to complete the order (-1 if it is impossible).

An example of input and output:

Input	Output
3 0 2 1 2 -1 1 3 -1 2 2 -1 2 0 1 1 -1 1 1 0 -1	5 -1