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|  | In the year 2163, wormholes were discovered. A wormhole is a subspace tunnel through space and time connecting two-star systems. Wormholes have a few peculiar properties:   * Wormholes are one-way only. * The time it takes to travel through a wormhole is negligible. * A wormhole has two end points, each situated in a star system. * A star system may have more than one wormhole end point within its boundaries. * For some unknown reason, starting from our solar system, it is always possible to end up in any * star system by following a sequence of wormholes (maybe Earth is the centre of the universe). * Between any pair of star systems, there is at most one wormhole in either direction. * There are no wormholes with both end points in the same star system.   All wormholes have a constant time difference between their end points. For example, a specific wormhole may cause the person travelling through it to end up 15 years in the future. Another wormhole may cause the person to end up 42 years in the past.  A brilliant physicist, living on earth, wants to use wormholes to study the Big Bang. Since warp drive has not been invented yet, it is not possible for her to travel from one-star system to another one directly. This can be done using wormholes, of course.  The scientist wants to reach a cycle of wormholes somewhere in the universe that causes her to end up in the past. By travelling along this cycle, a lot of times, the scientist is able to go back as far in time as necessary to reach the beginning of the universe and see the Big Bang with her own eyes. Write a program to find out whether such a cycle exists. | **(2 marks)** |
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|  | **(1 marks)** |
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