Problem MLK: Martin Luther King

The assassination of Martin Luther King was one of the stranger cases in ancient criminology. He was shot on April 4, 1968 at 18:01 while standing on the balcony of the Lorraine Motel in Memphis. His suspected murderer, James Earl Ray, first confessed but three days later recanted his confession. Therefore, until now it is not really clear what happened on this day. Was it really this strange guy named Raoul? Or James' brother Johnny? Was it a murder for hire? Maybe even from the government?
Nowadays, as it is possible to travel back in time, the Department of Modern Criminology got funding for a huge research project to investigate unsolved cases of the 20th century. As you are a student in criminology and find the topic fascinating, you volunteer to travel back in time to April 4, 1968 and to watch what really happened then. Unfortunately, the time machine did not bring you to Memphis but instead, you find yourself in San Francisco. Fortunately it is April 3, 19:05, so you still have time to travel to Memphis. Having no idea of how to drive any of the old vehicles called "cars" you are forced to take public transport. It is common knowledge, that public transport was quite bad in these days so you wonder if you will make it on time. During the journey, you usually have to switch trains (often more than just once) and to wait for the next connections. Being also a programmer you start writing a program that works on the train schedules and computes how long it takes to get to Memphis if you take the fastest possible way.

Input

There is only one test case. The first line gives the number $0 \leq n \leq 100,000$ of connections. The following n lines contain the connections in the form *cityA cityB distance connectionTime*. *cityA* and *cityB* are the names of the cities (which do not contain spaces and are at most 50 characters long) between which there is a one–way connection (from *cityA* to *cityB*). There are at most 10,000 cities. The *distance* is the distance rounded to full miles. Assume that the trains drive with a constant speed of 60 mph. The *connectionTime* is the time in minutes you have to wait in *cityB* to get the next connection (regardless to which city it will lead). Distances are strictly positive integers smaller or equal 10,000. Connection times are non-negative integers smaller or equal than 1,000. You may assume that there is only one connection (per direction) between each pair of cities.

Output

Output the earliest possible arrival time in `Memphis` when you start in `SanFrancisco` on April 3rd at 19:10. The time should be given as *hh:mm +d*, with *d* being the days between April 3rd and the arrival date. The time must be given with leading zeros if necessary. If the arrival day is April, 3rd, *d* is 0 (time has to be written as *hh:mm +0* in this case).

Sample Input 1

```
8
SanFrancisco Reno 219 5
SanFrancisco Berkeley 14 10
Berkeley SanFrancisco 14 5
Berkeley Denver 1259 65
Denver Memphis 1095 11
Reno LasVegas 448 25
Denver LasVegas 749 5
LasVegas Memphis 1578 0
```

Sample Output 1

```
09:05 +2
```