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Home Test for Software Development Engineer

Given a list of at most N records (in CSV format), each record describes an usage period of a specific mobile phone number.

Note that one phone number can occurs multiple times in this list, because of 2 reasons:
- This phone number can change from prepaid plan to postpaid plan, or vice versa, at anytime just by sending an SMS to the operator.
- Or, the owner of this phone number can stop using it, and after 1-2 months, it is reused by another person .

Beside, some data is not recorded, we just have the phone number and its activation or deactivation, because of 2 reasons:
- Activation date is the date that the phone number is started being used by a owner with a specific plan (prepaid or postpaid).
- Deactivation date is the date that the phone number is stopped being used by a owner with the registered plan.

Moreover, the records don't need to follow any specific order of time, and the records of the same number don't need to be consecutive .

This is an example of the list, given as a CSV file:

```
PHONE_NUMBER,ACTIVATION_DATE,DEACTIVATION_DATE
0987000001,2016-03-01,2016-05-01
0987000002,2016-02-01,2016-03-01
0987000001,2016-01-01,2016-03-01
0987000001,2016-12-01,
0987000002,2016-03-01,2016-05-01
0987000003,2016-01-01,2016-01-10
0987000001,2016-09-01,2016-12-01
0987000002,2016-05-01,
0987000001,2016-06-01,2016-09-01
```

In this list, ACTIVATION_DATE and DEACTIVATION_DATE are represented with YYYY-MM-DD format. DEACTIVATION_DATE may be empty, which means that the phone is still being used by its current owner.

Requirement:
- Find a list of <u>unique phone numbers</u> together with the <u>actual activation date</u>. Describe in detail your strategy and algorithm to solve this problem.
- Implement your solution in any programming language, with input is a CSV file as described above, and write the output as another CSV file with following format:

```
PHONE_NUMBER,REAL_ACTIVATION_DATE
0987000001,2016-06-01
0987000002,2016-02-01
0987000003,2016-01-01
```

- **For example:** The prepaid phone number _0987000001_ was used by A from _2016-01-01_ to _2016-03-01_, then it was changed to postpaid. A continued using it until _2016-05-01_ and stopped using this number. After 1 month, on _2016-06-01_ , this phone number was reused by B with prepaid plan. B used it until _2016-09-01_ then changed to postpaid, and finally changed back to prepaid _on 2016-12-01_ and he's still using it until now. In this case, the actual activation date of current owner B of 0987000001 that we want to find is 2016-06-01.