Super Scrabble

Filename: `scrabble`

Alice and Bob are playing a variant of Scrabble called Super Scrabble. In this game, there is a pool of some nonempty subset of the lowercase alphabet that is considered "usable" and a list of n valid words. Alice and Bob take turns picking one of the usable letters and putting a tile with that letter next in the sequence. If at any point, the sequence of placed letters is equal to a valid word, then the last player who played a letter wins and the game is over. If the sequence is longer than every valid word, then the game ends in a draw. There are enough tiles of each letter that they don't need to worry about running out of tiles for any of the usable letters.

Alice will go first. Obviously, both Alice and Bob want to win, and if they cannot win, would rather draw than lose. As usual, Alice and Bob are perfect logicians and will play optimally.

The Problem:

Given the list of usable letters and the valid words, determine the result of the game, assuming Alice plays first and both players play optimally.

The Input:

The first line of input contains a single, positive integer, g, representing the number of games Alice and Bob will play. The description of each game follows. The first line of each description contains two integers, n and m ($1 \leq n \leq 26$; $1 \leq m \leq 10^5$), representing the number of usable letters and the number of valid words, respectively. The next line contains n unique lowercase letters in increasing alphabetic order representing the usable letters. The next m lines each contain a single string of lowercase letters representing a valid word. Each word is at most 10^5 characters long composed out of usable letters, and the sum of all word lengths in a game is at most $2*10^5$.

The Output:

Output g lines each of the form "`Game #`x`: `r" where x is the game number and r is either the message "`Alice wins`", "`Bob wins`", or "`Draw`" depending on the result of the game.

Sample Input:

```
3
2 3
ab
aaa
ab
ba
3 4
abc
aaa
ab
cccc
ba
3 3
def
de
dedede
d
```

Sample Output:

```
Game #1: Bob wins
Game #2: Draw
Game #3: Alice wins
```