In this problem we consider words of size $n$ made up only of letters 'a', 'b' and 'c', and without two or more consecutive equal letters. Suppose that some positions of the word have fixed letters. Write a program to print all the words that meet these constraints.

**Input**

Input consists of several cases. Every case starts with $n$, followed by the number of fixed positions $f$, followed by $f$ pairs $p_i c_i$, where $p_i$ is a position between 0 and $n-1$ and $c_i$ is 'a', 'b' or 'c'. Suppose $1 \leq n \leq 15$, $0 \leq f \leq n$, and that all $p_i$'s are different.

**Output**

For every case, print in alphabetical order all words that satisfy the constraints. Print a line with 20 dashes at the end of each case.

**Sample input**

```
2 0
3 1 2 b
1 1 0 a
2 2 0 b 1 b
4 2 3 a 0 a
```

**Sample output**

```
ab
ac
ba
bc
cb
-----------------------------
acb
bab
bcb
cab
-----------------------------

a
-----------------------------

abca
acba
-----------------------------
```

**Problem information**

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