CCC '08 J2 - Do the Shuffle

Those tiny music machines that play your digital music are really computers that keep track of and play music files. The *CCC music player* (C^{3}MP) is currently in development and will be hitting the stores soon! In this problem, you have to simulate a C^{3}MP.

The C^{3}MP music player will hold 5 songs in memory, whose titles will always be "A", "B", "C", "D" and "E". The C3MP also keeps track of a *playlist*, which is an ordering of all the songs. The C^{3}MP has 4 buttons that the user will press to rearrange the playlist and play the songs.
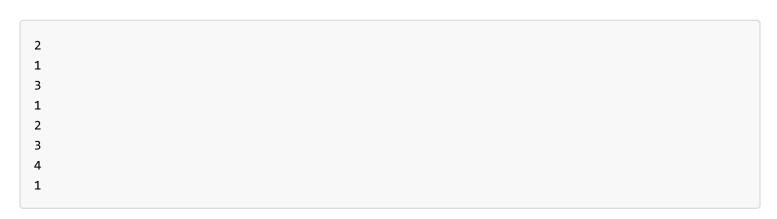
Initially, the C^{3}MP playlist is "A, B, C, D, E". The 4 control buttons do the following:

- Button 1: move the first song of the playlist to the end of the playlist.
  For example: "A, B, C, D, E" will change to "B, C, D, E, A".

- Button 2: move the last song of the playlist to the start of the playlist.
  For example, "A, B, C, D, E" will change to "E, A, B, C, D".

- Button 3: swap the first two songs of the playlist.
  For example, "A, B, C, D, E" will change to "B, A, C, D, E".

- Button 4: stop rearranging songs and output the playlist.

You need to write a program to simulate a CCC music player. Your program should repeatedly ask for two positive integers b and n. Here b represents the button number that the user wants to press, $1 \leq b \leq 4$, and n represents the number of times that the user wants to press button b. You can assume that n always satisfies $1 \leq n \leq 10$.

The input will always finish with the pair of inputs ($b = 4$, $n = 1$) when this happens, you should print the order of songs in the current playlist and your program should end. You can assume that the user will only ever press button 4 once.

Sample Input

```
2
1
3
1
2
3
4
1
```

Output for Sample Input

B C D A E

Explanation

1. (initial playlist is "A, B, C, D, E")
2. ($b = 2$, $n = 1$ so "A, B, C, D, E" changed to "E, A, B, C, D")
3. ($b = 3$, $n = 1$, so "E, A, B, C, D" changed to "A, E, B, C, D")
4. ($b = 2$, $n = 3$, so "A, E, B, C, D" changed to "B, C, D, A, E")
5. (b = 4, n = 1) When this happens, you should output the playlist.