## List Manipulator

Trifon has finally become a junior developer and has received his first task. It is about manipulating a list of integers. He is not quite happy about it since he hates manipulating lists. They are going to pay him a lot of money, though, and he is willing to give somebody half of it if to help him do his job. You, on the other hand, love lists (and money) so you decide to try your luck.

The list may be manipulated by one of the following commands

* **exchange {index}** – splits the list **after** the given index and exchanges the places of the two resulting sub-lists. E.g. [1, 2, 3, 4, 5] -> exchange 2 -> result: [4, 5, 1, 2, 3]
  + If the index is outside the boundaries of the list, print "**Invalid index**"
  + Negative index is considered invalid.
* **max** **even/odd**– returns the **INDEX** of the max even/odd element -> [1, 4, 8, 2, 3] -> **max odd** -> print **4**
* **min** **even/odd** – returns the **INDEX** of the min even/odd element -> [1, 4, 8, 2, 3] -> **min even** > print **3**
  + If there are two or more equal **min/max** elements, return the index of the **rightmost** one
  + If a **min/max even/odd** element **cannot** be found, print **"No matches"**
* **first {count}** **even/odd**– returns the first {count} elements -> [1, 8, 2, 3] -> **first 2 even** -> print [**8, 2]**
* **last {count}** **even/odd** – returns the last {count} elements -> [1, 8, 2, 3] -> **last 2 odd** -> print [**1, 3]**
  + If the count is greater than the list length, print "**Invalid count**"
  + If there are **not** **enough** elements to satisfy the count, print as many as you can. If there are **zero** **even/odd** elements, print an empty list "[]"
* **end** – stop taking input and print the final state of the list

### Input

* The input data should be read from the console.
* On the first line, the initial list is received as a line of integers, separated by a single space
* On the next lines, until the command "**end**" is received, you will receive the list manipulation commands
* The input data will always be valid and in the format described. There is no need to check it explicitly.

### Output

* The output should be printed on the console.
* On a separate line, print the output of the corresponding command
* On the last line, print the final list in **square brackets** with its elements separated by a comma and a space
* See the examples below to get a better understanding of your task

### Constraints

* The **number of input lines** will be in the range [2 … 50].
* The **list elements** will be integers in the range [0 … 1000].
* The **number of elements** will be in the range [1 .. 50]
* The **split index** will be an integer in the range [-231 … 231 – 1]
* **first/last count** will be an integer in the range [1… 231 – 1]
* There will **not** be redundant whitespace anywhere in the input
* Allowed working time for your program: 0.1 seconds. Allowed memory: 16 MB.

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 1 3 5 7 9  exchange 1  max odd  min even  first 2 odd  last 2 even  exchange 3  end | 2  No matches  [5, 7]  []  [3, 5, 7, 9, 1] |
| **Input** | **Output** |
| 1 10 100 1000  max even  first 5 even  exchange 10  min odd  exchange 0  max even  min even  end | 3  Invalid count  Invalid index  0  2  0  [10, 100, 1000, 1] |
| **Input** | **Output** |
| 1 10 100 1000  exchange 3  first 2 odd  last 4 odd  end | [1]  [1]  [1, 10, 100, 1000] |