How many games does each person win? X46022_en

With the aim of doing something in favor of harmony and solidarity for the peoples in the world, and to show that there are better ways to solve conflicts, a multinational company has decided to organize a ping-pong (table tennis) tournament between two teams, one consisting of Russian employees, and another consisting of employes from the USA.
There are n players on each team. Each player plays two matches against each member of the other team. Therefore, in total each player will play $2n$ ping-pong matches.
Actually, we can predict in advance how many matches each player will win, since we know the level of each employee as a ping-pong player. Any employee always wins the two matches against any other with an inferior level. In contrast, when someone plays with another player of the same level, then he/she wins exactly one of the two matches, therefore loosing the other.

Input

The input consists of several cases. Each case starts with a natural number n in one line. The second line contains a list of n pairs (string, natural number) with name and level of each of the Russian players. The third line, with the same format, lists the USA players. Finally, there is a blank line.

Output

For each case, the output has two lines. In the first, there is a list of n pairs (string, natural number) showing the name and number of matches won by each of the Russian players. The names have to go in the order in which they were read from the input. A second line contains the same information and with the same format but for the USA players. After that, a blank line comes.

Sample input 1

```
8
Victoria 2 Danyl 3 Irina 7 Denis 3 Alexey 6 Xenia 8 Sofia 2 Polina 1
Matthew 2 Joseph 7 Karen 2 Daniel 2 Thomas 2 John 5 Anthony 8 Michael 7

10
Elizaveta 3 Artyom 4 Sofia 2 Konstantin 2 Ivan 7 Alexander 6 Daria 5 Nikita 5 Nikolai 5 Adelina 6
John 1 Barbara 8 Robert 5 Jessica 6 Richard 8 Anthony 4 Matthew 7 James 1 Mary 5 Elizabeth 4

5
Xenia 1 Svetlana 8 Artyom 6 Alexey 5 Arina 4
Michael 2 Jennifer 6 Betty 6 Anthony 5 Sandra 5

8
Alexander 7 Denis 8 Mikhail 3 Polina 6 Xenia 2 Danyl 6 Anastasia 3 Daria 7
Christopher 6 Linda 7 Lisa 5 Michael 4 John 8 Richard 6 Elizabeth 4 Mary 5

14
Danyl 7 Konstantin 6 Svetlana 2 Sofia 5 Elena 2 Natalia 8 Victoria 4 Daria 8 Nikolai 2 Polina 1 V
Linda 7 Thomas 5 Sandra 7 Patricia 2 Betty 6 Karen 4 Jennifer 1 David 5 Daniel 4 Charles 3 Lisa

11
Vera 3 Anastasia 5 Elizaveta 1 Sergey 2 Victoria 1 Maks
Sarah 2 Mary 5 Joseph 1 Robert 5 Matthew 4 Michael 3 Ja

14
Konstantin 6 Alexey 2 Xenia 8 Sergey 5 Svetlana 5 Anast
Lisa 3 Daniel 7 Christopher 3 James 5 Anthony 1 Jessica

8
Alexey 6 Denis 6 Vera 4 Sofia 2 Daria 7 Konstantin 2 Iva
Mary 2 Jennifer 4 Robert 7 David 3 Elizabeth 6 Richard

7
Alexander 3 Sergey 6 Mikhail 3 Nikita 7 Roman 5 Arina 4
Thomas 6 Michael 1 Richard 2 Barbara 7 Elizabeth 6 Jame

7
Artyom 1 Svetlana 6 Elena 4 Daria 7 Maksim/Maxim 3 Eliz
Jennifer 6 Thomas 5 Daniel 6 Elizabeth 2 Robert 1 Betty

5
Anastasia 1 Alexey 5 Elena 3 Elizaveta 4 Sergey 3
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```
Mary 4 Anthony 8 Jennifer 1 Betty 7 Lisa 6

5
Arina 8 Artyom 4 Danyl 8 Maksim/Maxim 5 Nikita 3
Michael 1 Christopher 7 Barbara 6 Joseph 3 Nancy 8

12
Xenia 5 Maksim/Maxim 6 Ivan 1 Anastasia 8
Barbara 3 Jessica 2 William 2 Matthew 3 Jennifer 1 Robert 8 Michael 1 Charles 4 Christopher 8 Ka

11
Polina 6 Yevgeny 6 Artyom 7 Denis 8 Sofia 7 Konstantin 6 Nikita 8 Maksim/Maxim 2 Elena 6 Roman 3
Jennifer 1 John 7 David 6 Matthew 3 Michael 1 Christopher 2 Daniel 8 Susan 6 Anthony 6 William 2

6
Denis 2 Alexey 8 Svetlana 1 Vera 6 Adelina 2 Sergey 7
Karen 6 Mary 2 Richard 7 Nancy 4 Sarah 3 Joseph 5

9
Elizaveta 3 Nadezhda 7 Yevgeny 8 Irina 7 Sergey 1 Nikita 8 Roman 2 Nikolai 8 Natalia 1
Linda 7 Elizabeth 3 Nancy 1 Joseph 7 Lisa 8 Michael 6 David 5 Sarah 5 Susan 4

13
Nadezhda 2 Irina 8 Alexey 4 Victoria 8 Artyom 7 Dmitry 2 Daria 4 Elizaveta 6 Adelina 4 Mikhail 1
Sandra 6 Lisa 8 Linda 7 Susan 4 Mary 4 Betty 4 Daniel 8 Elizabeth 6 William 6 Thomas 3 Jennifer

7
Nikolai 3 Yevgeny 5 Vera 3 Danyl 5 Roman 3 Alexey 4 Irina 5
Jennifer 8 Sandra 2 Joseph 5 Lisa 5 James 4 Sarah 5 Daniel 6

8
Alexander 1 Nadezhda 2 Anastasia 5 Vera 4 Nikita 3 Irina 4 Sergey 3 Elizaveta 2
Christopher 7 David 6 Betty 6 Mary 8 Jennifer 5 Karen 3 Elizabeth 5 William 1

11
Nikolai 6 Nadezhda 8 Roman 3 Vera 4 Polina 1 Konstantin 6 Ivan 3 Danyl 7 Victoria 2 Maksim/Maxim
Patricia 1 Charles 8 Daniel 3 Karen 8 David 3 Matthew 2 Barbara 4 James 7 Elizabeth 3 Sarah 3 Sa
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Sample output 1

```
Victoria 4 Danyl 8 Irina 12 Denis 8 Alexey 10 Xenia 15
Matthew 4 Joseph 13 Karen 4 Daniel 4 Thomas 4 John 10 A
Elizaveta 4 Artyom 6 Sofia 4 Konstantin 4 Ivan 15 Alexan
John 0 Barbara 20 Robert 11 Jessica 16 Richard 20 Antho
Victoria 6 Daria 3 Natalia 1 Irina 1 Alexander 3 Konst
Xenia 0 Svetlana 10 Artyom 8 Alexey 4 Arina 2
Michael 2 Jennifer 7 Betty 7 Anthony 5 Sandra 5

Alexander 13 Denis 15 Mikhail 0 Polina 10 Xenia 0 Danyl
Christopher 8 Linda 12 Lisa 6 Michael 6 John 15 Richard
Danyl 26 Konstantin 23 Svetlana 5 Sofia 19 Elena 5 Natal
Linda 23 Thomas 18 Sandra 23 Patricia 5 Betty 21 Karen
Vera 8 Anastasia 16 Elizaveta 1 Sergey 4 Victoria 1 Mak
Sarah 7 Mary 15 Joseph 3 Robert 15 Matthew 14 Michael 1
Konstantin 22 Alexey 5 Xenia 26 Sergey 21 Svetlana 21 A
Lisa 7 Daniel 23 Christopher 7 James 13 Anthony 1 Jessi
Alexey 7 Denis 7 Vera 5 Sofia 1 Daria 10 Konstantin 1 Iv
Mary 3 Jennifer 7 Robert 13 David 6 Elizabeth 10 Richar
Alexander 5 Sergey 8 Mikhail 5 Nikita 12 Roman 6 Arina
Thomas 11 Michael 0 Richard 1 Barbara 13 Elizabeth 11 J
Artyom 1 Svetlana 12 Elena 5 Daria 14 Maksim/Maxim 4 El
Jennifer 11 Thomas 9 Daniel 11 Elizabeth 3 Robert 1 Bet
Nikita 3 Irina 4 Sergey 3 Elizaveta 2
Anastasia 1 Alexey 4 Elena 2 Elizaveta 3 Sergey 2
Mary 7 Anthony 10 Jennifer 1 Betty 10 Lisa 10

Arina 9 Artyom 4 Danyl 9 Maksim/Maxim 4 Nikita 3
Michael 0 Christopher 6 Barbara 6 Joseph 1 Nancy 8
Xenia 20 Maksim/Maxim 20 Ivan 2 Anastasia 22 Victoria 2
Barbara 12 Jessica 9 William 9 Matthew 12 Jennifer 4 Ro
Polina 15 Yevgeny 15 Artyom 19 Denis 21 Sofia 19 Konstan
Jennifer 0 John 16 David 10 Matthew 5 Michael 0 Christo
Denis 1 Alexey 12 Svetlana 0 Vera 9 Adelina 1 Sergey 11
Karen 7 Mary 4 Richard 9 Nancy 6 Sarah 6 Joseph 6
Elizaveta 3 Nadezhda 14 Yevgeny 17 Irina 14 Sergey 1 Ni
Linda 10 Elizabeth 7 Nancy 2 Joseph 10 Lisa 15 Michael
Nadezhda 0 Irina 23 Alexey 7 Victoria 23 Artyom 19 Dmit
Sandra 14 Lisa 23 Linda 17 Susan 11 Mary 11 Betty 11 Da
Nikolai 2 Yevgeny 7 Vera 2 Danyl 7 Roman 2 Alexey 3 Iri
Jennifer 14 Sandra 0 Joseph 11 Lisa 11 James 7 Sarah 11
Alexander 1 Nadezhda 2 Anastasia 6 Vera 4 Nikita 3 Irin
Christopher 16 David 16 Betty 16 Mary 16 Jennifer 15 Ka
Nikolai 16 Nadezhda 20 Roman 10 Vera 15 Polina 1 Konsta
Patricia 1 Charles 19 Daniel 6 Karen 19 David 6 Matthew
```

Observation

Evaluation over 10 points:

- Slow solution: 5 points.
- Fast solution: 10 points.

A fast solution is correct, has cost $n \log(n)$ and passes both public and private test cases. A slow solution is not fast, but it is correct and passes the public test cases.

Problem information

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