Problem 7: Bookshelf

Agnes C. Mulligan is a fanatical bibliophile. She is continually buying new books. She has a shelf where she puts her newest books. When she decides to read one of these books, she removes it from its location on the shelf, leaving a "hole" equal to the width of the book. When she buys a new book she places it on the left side of the shelf, which may push one or more books already on the shelf toward the right. This action may cause one or more books to fall off the right end of the shelf.

Your task is to write a program that simulates the addition of books to, and the removal of books from a shelf with a given width. At the end of the simulation, your program is to identify the books on the shelf. Each book has an unique integer identifier in the range 1 to 1000, and has an integral width (in inches) less than or equal to the width of the shelf. A book falls off the shelf if any part of it extends beyond the right end of the shelf.

Input

The input will contain multiple cases, the number of which is specified by the first integer in the input. Each case begins with an integer that specifies the width of the shelf, in inches; this width will be no smaller than 5 inches. This is followed by a sequence of "events," each on a separate line. The type of event is specified by the capital letter '**A**' (add a book), '**R**' (remove a book), or '**X**' (end the simulation); this letter appears in the first column of the line. For an '**A**' event the line also contains integers giving the book identifier and its width, in inches. For an '**R**' event the line also contains the integer book identifier. An '**X**' event line contains no additional information.

Output

For each case, display the case number (they start with 1 and increase sequentially) and the integer identifiers of the books on the shelf, in order from left to right. Separate the output for consecutive cases by a blank line. Your output should resemble that shown in the sample below.

Sample Input	Output for the Sample Input
2 10 A 6 5 A 42 3 A 3 5 A 16 2 A 15 1 R 16 X 5 A 1 1 A 2 1 A 3 1 R 2 A 4 1 A 5 1 R 5 R 4 A 6 1 A 7 4 X	Case 1: 15 3 Case 2: 7 6