

COP 3223 Program #7: Girl Scout Cookie Sales (Files, Two Dimensional Arrays)

Due Date: Please Consult WebCourses

Objective

1. To give students practice in reading input from files.
2. To give students practice utilizing both 1 dimensional and 2 dimensional arrays.

Problem: Girl Scout Cookie Sales – Real Time Queries

The national organization LOVED your beautiful text bar graphs, summarizing the cookie sales for your troop.

They've liked it so much, they've decided they would like to add to the types of queries they can ask.

In the previous program, a bar graph was printed showing the either the total sales of each cookie type OR the total sales made by each girl in the troop.

This time, the Girl Scouts have asked for you to write a program that answers three types of queries (two similar to the information in the graphs you previously printed and two new ones).

Also, since it's planning on making many queries, the Girl Scouts no longer need bar graphs, just single integer answers to their questions.

In particular, your program should read through an input file called, "detailedcookiesales.txt" and process the sales and queries listed in that file. The details of the file format are in the next section.

Here are the four types of queries you may receive:

1. Reporting the number of boxes of cookies a particular girl has sold.
2. Reporting the number of boxes of cookies of a particular type that the troop has sold.
3. Reporting the number of a particular cookie box a particular girl has sold.

Just like the last program, assume that there are 11 types of cookies numbered 0 through 10 and that there are 15 girls in the troop, numbered 0 to 14.

Your program should read its input from the file "detailedcookiesales.txt" and output to standard output.

Input File Format (detailedcookiesales.txt)

The first line of the input file will contain a single positive integer, n ($n \leq 10000$), representing the number of operations your program will trace through.

All operations are of four types:

1. Sale operation – one of the girls sells 1 or more boxes of 1 type of cookie.
2. Query for a particular girl – given a particular girl in the troop, how many boxes of cookies has she sold so far?
3. Query for a particular type of cookie – given a particular type of cookie, how many boxes of that type of cookie have been sold so far?
4. Query for a particular girl selling a particular type of cookie – given a particular girl in the troop AND a particular type of cookie, determine how many boxes of that cookie type she has sold so far.

The input file will contain n additional lines, each containing information about one operation, in the sequence they occur.

The first integer on each of these lines will either be 1, 2, 3 or 4, indicating whether the operation is a sale operation or a report operation, respectively.

For all sale operations, the line will be followed by three more space separated integers: g ($0 \leq g \leq 14$), representing the number of the girl making the sale, t ($0 \leq t \leq 10$), the type of cookie box she sold, and q ($1 \leq q \leq 10$), the number of boxes she sold.

For a query of type 2, the line will contain a second integer, ($0 \leq g \leq 14$), representing the number of the girl the query is about.

For a query of type 3, the line will contain a second integer, t ($0 \leq t \leq 10$), the type of cookie box for the query.

For a query of type 4, the line will contain two more integers, both ($0 \leq g \leq 14$), representing the number of the girl, followed by t ($0 \leq t \leq 10$), the type of cookie box for the query.

Output Format (to standard output)

For each query of type 2, 3 or 4, output a single integer on a line by itself, indicating the number of cookie boxes that is the answer to the query.

Sample Input/Output

Will be provided in a separately posted file.

Implementation Requirements

You must utilize two one-dimensional arrays (just like program 6) to keep track of aggregate sales for girls and cookie types, as well as one two-dimensional array, which stores the granular information about the number of each type of cookie each girl has sold. While this array could be indexed either way, **for the purposes of this assignment please assign the first index to the girl number and the second index to the cookie number.**

Grading Details

No function prototypes have been given but you can only get full credit if you write functions that do reasonable logical tasks. In particular, it's recommended that you write functions that take in an array and its length and do something with that information. (A minimum of two of these functions is required for full credit.) Also, the format of the graph has been given in such a way that the same function can print out either type of graph. In order to get full credit, you must call the same function twice, for both types of graphs.

Your grade will be based on programming style, use of arrays and functions and correctness.

Deliverables

Please submit a single .c file called, detailedcookiesales.c. Please make sure to fully comment your code, including both a header comment and internal comments.