

## Program Synopsis

The program determines the total number of subjects that may be assigned to pupils such that every student receives exactly one topic they are interested in.

## Arrays and Variables

n: an integer representing the total number of subjects and students who have preferences  
[MAX][MAX]: a 2D array used to hold each student's preferences, where preferences[i][j] is 1 if the ith student likes the jth topic, [j] is 1, and if not, allocated[MAX]: an array to record the subjects that students have been allocated; assigned[i] = 1 in the event that the ith topic has been assigned; else, count\_assignments = 0 Operation

This function, which is recursive, determines how many subjects may be assigned to students.

It accepts an integer student as input, signifying the student under consideration at that moment.

Student equals n indicates that every student has received a topic assignment; thus, the function returns 1 (i.e., one potential assignment).

If not, the function loops through every subject (ranging from 0 to n-1) and:

Verifies whether the present student likes the subject (preferences[student][topic] == 1) and whether another student hasn't been given the topic (assigned[topic] == 0).

In the event that both criteria hold true, the topic is assigned to the student (assigned[topic] = 1), count\_assignments is called recursively with the subsequent student (student + 1), and the topic is then unassigned (assigned[topic] = 0).

The function yields the total number of potential assignments, or the sum of the recursive calls.

**primary Function:** Reads the input's number of pupils (n).

takes each student's preferences from the input and saves them in the preferences array.

uses the first student (0) to use the count\_assignments function, and then outputs the result, which is the total number of potential assignments.

Example Input and Output

Input: 3 (number of students) followed by the preferences of each student:

1 1 0

0 1 1

1 0 1

Output: 2 (number of possible assignments)