AMERICAN COMPUTER SCIENCE LEAGUE

2000-2001 **CONTEST #1**

SENIOR DIVISION PROGRAMMING PROBLEM

WRAP AROUND CODE

PROBLEM: This is yet another in a long list of ACSL code programs. You would think we would have run out of them by now. In this program you will be given a set of letters to encode. The difference here is that different rules are used for different letters and the counting process starts where the last letter ends. Using the numerical value of each letter (A=1, B=2, … Z= 26) the rules are as follows:

	The number of letters to count is given by:
RULE 1	Multiply its numerical value by 2
RULE 2	Divide its numerical value by 3. Multiply the integer remainder by 5
RULE 3	Divide its numerical value by 4. Multiply the integer part of the quotient by –8.
RULE 4	Take the square root of the numerical value. Truncate the decimal part of the answer. Multiply the resulting integer by –12.
RULE 5	Find the sum of the factors of its numerical value. Multiply by 10.

For the first letter of each set, if the computed value is non-negative, starting at A count the computed value to the right. For each additional letter start at the current encoded letter. If the first computed value is negative, starting at A count to the left which means wrapping around to the end of the alphabet. For each additional letter start at the current encoded letter. As an example, the input C, 1, B, 2, F, 3, $ would produce the encoded letters GQI. The C with a numerical value of 3 evaluates to a 6, using rule 1. Always starting each new set at A, and counting 6 letters to the right, the C encodes to an G. The B with a numerical value of 2 evaluates to a 10. Counting down the alphabet 10 letters from G encodes the B to a Q. The F with a numerical value of 6 evaluates to a –8, using rule 3. Counting to the left 8 letters from Q encodes the F to an I. The final encoded value is GQI.

INPUT: There will be 5 input lines. Each line will consist of a series of upper case letters each followed by a rule number. The line will end with a $. You may enter the letters and numbers one at a time. The commas shown are for clarification and do not have to be entered. The $ is not encoded.

OUTPUT: For each input line, print the encoded string it produces.

SAMPLE INPUT	SAMPLE OUTPUT
1. C, 1, B,2, F,3, $	1. GQI
2. A,1,A,1,A,1,$	2. CEG
3. A,1,H,2,D,3,$	3. CME
4. T,5,S,4,$	4. EI

Note: Students have 72 hours in which to submit a solution. Students may not consult any person for assistance. The program must accept all the data and print all the solutions in one RUN of the program. We suggest that you print the solution for each input prior to entering the next input since, if the program stops, you will not be allowed to enter the remaining data.. Make sure that you put your name, your school name and your division at the top of your program file. Advisors must send to ACSL the program file of all students who score a 10 for the contest.

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TEST DATA

TEST INPUT	TEST OUTPUT
1. A,1,B,1,C,1,$	1. CGM
2. A,2,C,4,S,5,L,3,$	2. FTLN
3. C,5, P,4,L,3,U,2,S,1,$	3. OSUUG
4. C,2,H,3,P,4,$	4. AKO
5. M,1,O,2,N,3,T,4,R,5,E,1,A,2,L,3,$	5. AACGGQVX