

## Purpose

The purpose of this assignment is to give you more practice with writing functions and FOR loops.

## Problem

Write a program that computes the values of Sine, Cosine and Tangent of values given in degrees. We want to compute a range of values between 0 and 360 (integer values will suffice). The output must be a table of values showing Sine, Cosine and Tangent values. The complete computation and printing of the table must be done inside a function. The function also returns to the main program with 3 output arguments: (1) Number of negative values for Sine (2) Number of negative values for Cosine (3) Number of indeterminate values for Tangent (typically these are infinity values or for the purposes of your program they will be anything outside the -100 to 100 range).

**[25 points]** The main program prompts the user to enter 2 integers which is the range of values to be computed. You will need to make sure that the user does not enter a range outside of 0 and 360. If they do, then display an error message and ask them to re-enter 2 numbers. There is no looping in the main program to continuously accept input as long as one set of inputs are valid (i.e. after the user enters a pair of valid integers, the program stops). Also, do not allow the user to enter inputs that will have a range of more than 90 (some valid ranges are 0 and 90; 90 to 180, 170 to 240, etc.).

After the function is called to print the table of values, **the printing of the 3 additional items** (Total number of negative values for Sine, Cosine and indeterminate values for Tangent) **must be done in your main program** (and not in the function that computes them).

**[65 points]** Your function needs to have 2 integers as input arguments (for range). Your function does not return any value (void function) but has 3 output arguments (pointers to integers) one for the total count for each of the items mentioned above. Your function **MUST** use at least one FOR loop to compute the range of Sine, Cosine, Tangent values from the smallest to the largest in increments of 5 (You can use the Math library functions sin, cos and tan). The printing of all the table of computed values must be done inside the FOR loop (in the function). Your function can have any other print statements as needed to be able to print a clean, well-aligned table of values with a heading for each column.

**[10 points]** Comments and Code Organization

## Input

Input should be taken from the user only in the main() function. The input will come from standard input, that is, from a user at the keyboard.

## Output

Output will be sent to standard output (the screen). The initial message about the program to the user and any error messages about the input should be output in the main() function.

## Testing

On all your assignments, including this one, it is crucial that you test your program thoroughly.

Do not add additional features that are not being asked for, since your program may not run against test inputs that I have created.

## Details

- You must follow all the coding style rules as specified in our “coding guidelines”. In particular:
  - You must put your name enclosed in a comment box at the top, and keep any other comments that are already there.
  - Keep lines to the point of making your code easily readable. It is a good idea to make your comment box lines 66-80 characters long and use this as a guide.
  - You must use good names for any variables you create (a full word that describes what it is there for).

## Submission

Submit this assignment with the code 4P followed by the name of your source file