

# Programming Design, Spring 2016

## Homework 5 Solution

Solution provider: Wei-Hung Liao  
Department of Information Management  
National Taiwan University

### Problem 1

- (a) `ATTRIB_CNT` is a global variable. Since the variable doesn't change during the program's lifetime and is used by function `main` and `f`, it is good to declare it as global variable here.
- (b) We can observe that each person has `ATTRIB_CNT` attributes in the matrix. The function return the index of the person which has max value of the sum of the value of all the attributes.
- (c) The parameter `max` gets the maximum of the sums mentioned in (b). Though the parameter is an array with length 1, it cannot be replaced by a single integer variable. The reason is that the "call-by-value" mechanism, which is adopted if we pass a single variable, does not allow function to change the variables passing through the parameters.
- (d) The output is 1 22 and 2 16. The sum of all the attributes of each person is 12, 22, 10, 12, and 16. The index of the maximum is 1 (starting index is 0). So the first part of the output is obviously 1 22. When we execute `f(person+2, 3, max)`, the first and the second parameters form the matrix with the last three people. So the person we find is actually the person with the maximum sum in the last three person, which has index 2 (the fifth person in the original) and maximum 16.

### Problem 2

Please see the attached CPP file.

### Problem 3

Please see the attached CPP file.