

ES 112 Algorithms and Computer Programming

2020 Spring – Homework 1 – Functions, while

1) (40p) Write a C program to perform the following operations using functions.

- a. Write a function named `average()` which has 3 integer parameters `a`, `b` and `c`. It calculates the average of `a`, `b` and `c`. It returns the average which is a double value.
- b. Write a main program `main()` which reads 3 integers `x`, `y` and `z` from the keyboard. Then call the function `average()` to calculate the following:
$$t = (x-k)^2 + (y-k)^2 + (z-k)^2$$

where k is the average. You **must** call function `average()` to calculate k .

Print the values k and t at the end.

2) (60p) Write a C program to perform the following operations using functions.

- a. Write a function named `sum_interval()` which has 2 integer parameters `a` and `b`. It calculates the sum $a + (a+1) + (a+2) + \dots + (b-1) + b$. It returns the sum as an integer. Assume that $0 < a < b$.
- b. Write a main program `main()` which reads 4 integers `x`, `y` and `m`, `n` from the keyboard. Then call `sum_interval()` to calculate the following:
$$\text{sum} = x + (x+1) + \dots + (y-1) + y + m + (m+1) + \dots + (n-1) + n.$$
Assume $0 < x < y < m < n$.

Print the value `sum` at the end.

Submission information:

Submit your .c files as a single archive (rar) file: YOUR_FULLNAME_Hw1.rar.

The archive should include YOUR_FULLNAME_Q1.c, YOUR_FULLNAME_Q2.c.

Late submissions will not be accepted!

Please do your own work!