

Programming 1 – Exercise Set 3

1. Write a function *swap()* that swaps two numbers (values of two variables).
2. Write a function *swap_cyclic()* that swaps three numbers (values of three variables) in cyclic order (a b c -> c a b). Prepare the main program so that it can operate on n-cycles, printing actual values after each cycle.
3. Write a function *analyze_digits()* that analyses whether integer number has repeated digits. Function should return a value informing about repeated digits (e.g. 1 if has repeated digits and 0 if has no repeated digits) and example repeated digit.
4. Modify task 3 by adding function *digit_statistics()* which find the mostly repeated digit and number of its occurrence (you might need to also modify function *analyze_digits()*). Give information and statistics to the user.
5. Write a function *print_name_age()* that prints names of persons starting with letter 'A' and older than 20 years for data given below:

```
int ages[] = {43, 23, 21, 89, 2};  
char *names[] = {"Alan", "Frank", "Ann", "John", "Andrew"};
```

6. Write a function *delete_element()* that deletes an element from the specified location from array. Provide separate functions to read and print data.
7. Write a function with three parameters: two arrays A and W of double values and an integer n which is the length of both arrays. Function should calculate and return the weighted mean of values from array A with weights from array W.
$$\frac{\sum_{i=0}^n w_i a_i}{\sum_{i=0}^n w_i}$$
8. Write a function with three parameters: array of double values A, array of double values B and an integer n (length of the arrays). Function should write to the array B elements of the array A arranged in the reverse order.
9. Write a function (with only one loop) with two parameters: array of integer values A and an integer n (length of the array A). Function should find and write to the console the least element and the largest element of the array.
10. Write a program asking user for three sets of five double numbers and:
 - a. saving that data in array of size 3 x 5;
 - b. calculating mean of each subset separately
 - c. calculating mean of all values
 - d. finding maximum of all values.

Provide separate functions for all subtasks.

Programming 1 – Exercise Set 3 (B Side)

1. For each of the following constants write its binary representation

010 0x10 024 0xae

2. Express each of the following binary numbers as octal and hexadecimal constant

100000 11011 1011100

3. Convert each of the following constants to a decimal number

1011 0241 0137 077 0xc0 0xFF 0x2d

4. Write each of the following decimal numbers as binary, octal and hexadecimal constant.

169 4096 127 500