

DATA STRUCTURES AND ALGORITHMS

PRACTICE No.7

Exercises

Exercise No.1 (warming up)

Find sum of the digits of any integer number i.e.

$$245819 = 2 + 4 + 5 + 8 + 1 = 29$$

Exercise No.2

Measure and compare running time in seconds of:

- Filling array and linked list with series of random numbers
- Searching of max element of array and linked list

Exercises

Exercise No.3 (Homework)

Write a code (recursive and iterative) for finding **greatest common divisor** (gcd) of two number. Two algorithms are possible:

1. Euclidean algorithm (gcd divide difference of two numbers)
2. Factorization (using prime numbers)

Time

```
#include <time.h>    /* clock_t, clock, CLOCKS_PER_SEC */

int main ()
{
    clock_t time1, time2;
    float total_time;

    time1 = clock();
    ....
    time2 = clock() - time1;

    total_time = ((float)time2) / CLOCKS_PER_SEC;
    return 0;
}
```