**BIRZEIT UNIVERSITY**

Electrical and Computer Engineering

Computer Organization and Microprocessors – ENCS2380

Assembly Assignment

Spring 2022

Deadline: **Monday 20/6/2022**

## Instructions:

- It should be an Assembly program, written entirely from scratch by you, satisfying the requirements specified below.
- This assignment is individually work, so every student has to submit his/her own solution and be ready for discussion.
- It is very important that you write easily readable, well-designed, and fully commented code [You must organize your code using procedures].
- No late submission will be accepted.

## Assignment:

Use Keil uvision 5 software to develop an ARM assembly program with the followings specifications:

**a)** Declare an array of at least 10 8-bit unsigned integer numbers in the memory with initial values.

   e.g. 34, 56, 27, 156, 200, 68, 128,235, 17, 45

**b)** Find the sum of all elements of the array and store it in the memory, e.g. variable SUM.

**c)** find the sum of the even numbers in this array and store it in the memory, e.g. variable EVEN

 **d)** Find the largest power of 2 divisor that divides into a number exactly for each element in the array and store it in another array in the memory. You have to use a procedure (function), **POW2**, which takes an integer as an input parameter and return its largest power of 2. For example, POW(52) would return 4, where POW(56) would return 8, and so on.

**Hint:** You can find the largest power of 2 dividing into a number exactly by finding the rightmost bit of the number. For example, $(52)_{10} = (110100)_2$  has its rightmost bit in the 4's place, so the largest power of 2 divisor is 4; $(56)_{10} = (111000)_2$ has the rightmost bit in the 8's place, so its largest power of 2 divisor is 8.