**HOMEWORK 3**

**Instruction:**

* The submission deadline is **2024 Nov. 7 23:59**. Late submissions will not be accepted.
* The solutions should be submitted to Canvas. Email submissions (or other form of submissions) will not be submitted.
* Your submission should contain **4** **“\*.asm” files** (the **assembly** file format), each for one of the four questions. The files should be named as **“HW3-SID-Q1.asm”, “HW3-SID-Q2.asm”, “HW3-SID-Q3.asm” and “HW3-SID-Q4.asm”**, where SID is replaced by **your own SID**.

**Question 1 (15%):**

Write an assembly program to compute:

((x + y) \* z) & w

and print the result, where “&” is bit-wise logical AND, x, y, z, w are four integers received from the keyboard as input.

**Question 2 (15%):**

Write an assembly program to print:

My name is #name#. My student ID is #SID#. My project name is #project#.

where #name# is replaced by **your own name**, #SID# is replaced by **your own SID**, and #project# is received from user input.

**Question 3 (20%):**

Write an assembly program, which receives one integer ***x (7 >= x >= 0)*** from the keyboard as input, and print the value of ***f(x),*** where ***f(x)*** is the function which maps the place to the number of **your own SID** (i.e., the same ***f(x)*** as in HW2, which is derived based on **your own SID**).

***Example:***

*If a student’s SID is 45738429, the number at place 0 is 4, the number at place 1 is 5, …, the number at place 7 is 9.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *place* | *0* | *1* | *2* | *3* | *4* | *5* | *6* | *7* |
| *number* | ***4*** | ***5*** | ***7*** | ***3*** | ***8*** | ***4*** | ***2*** | ***9*** |

*Correspondingly, we can get function f(x) with the above example:*

*f(0) = 4, f(1) = 5, …, f(7) = 9.*

**Question 4 (50%):**

Write an assembly program, to compute and print the value of ***h(x) for x=0, x=1, … x=30***, where ***h(x)*** is defined as

where, ***f(x)*** is the function derived in Question 3 based on **your own SID**.

For each ***x*** value, the result should be printed in a separate line, using the format “h(x) = …”

You should use ***function calls*** to implement this program.

***Example:***

**With the f(x) in the example of Question 3, the output of the program should be:**

h(0) = 4

h(1) = 5

h(2) = 7

h(3) = 3

h(4) = 8

h(5) = 4

h(6) = 2

h(7) = 9

h(8) = 7

h(9) = 14

h(10) = 12

h(11) = 19

h(12) = 17

h(13) = 24

… …

*the illustration of this example stops here, but your program should print all lines until h(30)*