Lab 05

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Ex. 1

Write a program in ARM assembly language executing this tasks:

- Rename register `r1` to `single_value`, `r2` to `double_value`, `r3` to `triple_value`, `r4` to `quadruple_value` e `r5` to `quintuple_value`
- Assign some value to `single_value`

Ex. 1 (cont.)

- By only using `MOV` and sum, assign these values to the registers:
  - `double_value` = `single_value` *2
  - `triple_value` = `single_value` *3
  - `quadruple_value` = `single_value` * 4
  - `quintuple_value` = `single_value` * 5

Ex. 1: suggestions

- Exploit Inline Barrel Shifter with `MOV`
- For the sum, `Rd = Rn1 + Rn2` use:

```
ADD Rd, Rn1, Rn2
```

Ex. 2

Write a program in ARM assembly language executing this tasks:

- Allocate 26 byte into a memory area DATA READWRITE, without initializing them
- Initialize `r0` and `r1` to 1
- Assign to registers `r2`-`r12` the elements of Fibonacci sequence. For example:
  - `r2 = r1 + r0`
  - `r3 = r2 + r1`

Ex. 2 (cont.)

- Assign to `r14` the address of the first byte of memory area allocated before
- Using pre-indexed addressing, save the least significant byte of registers `r0`-`r12`, incrementing `r14` at each assingment
- Using post-indexed addressing mode, save the least significant byte of registers `r12`-`r0` (reverse order), incrementing `r14` at each assignment.

Ex. 2 (cont.)

- At the end, check that the content of the memory is the following:

01 01 02 03 05 08 0D 15 22 37 59 90 E9 E9 90
59 37 22 15 0D 08 05 03 02 01 01

Ex. 3

Write a program in ARM assembly language executing this tasks:

- Define the following constants in the code area

```
myConstants DCW 57721,56649, 15328, 60606, 51209, 8240, 24310, 42159
```

- Allocate 16 byte (4 word) in a data area
- Considering the constants into couples, write in the 4 word the sum of the 4 couples of constants.