EEE204 - Introduction to Embedded Systems
Experiment 3

Objectives:
- Become familiar with the MSP430 instruction set data transfer instructions, arithmetic instructions, logic instructions, and the program control instructions.

Materials

- Code Composer Studio IDE
- MSP430F5529 USB LaunchPad development kit

Experimental Work

1) Do the following operations in assembly language and observe the content of R5 register.

- Copy 5500H to R5 register.
- Increase the content of R5 by 1.
- Increase the content of R5 by 1.
- Increase the content of R5 by 1.
- Increase LSB of R5 by 1.

```
main:
            mov.w     #5500h, R5
            inc       R5
            inc       R5
            inc       R5
            inc.b     R5
            jmp main
```

2) Do the following operations in assembly language and observe the content of memory locations.

- Copy 2222H,2224H and 2226H to the memory locations 3000H,3002H,3004H respectively.
- Increase the content of memory location 3000H by 1.
- Increase the content of memory location 3000H by 1.
- Increase the content of memory location 3002H by 1.
- Increase the content of memory location 3002H by 1.
- Increase the content of memory location 3004H by 2.

main:

```
            mov.w     #0x3000,R5
            mov.w     #0x2222,0(R5)
            mov.w     #0x2224,2(R5)
            mov.w     #0x2226,4(R5)

            inc       0(R5)
            inc       0(R5)
            inc       2(R5)
            inc       2(R5)
            incd4(R5)
            jmp main
```

3) Do the following operations in assembly language and observe the content of R5 register.

- Copy 5508H to R5 register.
- Decrease the content of R5 by 1.
- Decrease the content of R5 by 1.
- Decrease the content of R5 by 1.
- Decrease LSB of R5 by 1.

main:

```
            mov.w     #5508h,R5
            dec       R5
            dec       R5
            dec       R5
            dec.b     R5
            jmp main
```

4) Do the following operations in assembly language and observe the content of R5 register.

- Copy 2222H,2224H and 2226H to the memory locations 3000H,3002H,3004H respectively.
- Decrease the content of memory location 3000H by 1.
- Decrease the content of memory location 3000H by 1.
- Decrease the content of memory location 3002H by 1.
- Decrease the content of memory location 3002H by 1.
- Decrease the content of memory location 3004H by 2.

main:

```
            mov.w     #0x3000,R5
```

```
mov.w    #0x2222,0(R5)
mov.w    #0x2224,2(R5)
mov.w    #0x2226,4(R5)

dec      0(R5)
dec      0(R5)
dec      2(R5)
dec      2(R5)
decd     4(R5)
jmp main
```