440 HW

Problem 2.1

Solution:

~~Let us assume that ~~variables~~ the following variables are mapped to their respective registers.~~

~~f = $s0~~
~~g = $s1~~
~~h = $s2~~
~~i = $s3~~

f = g + (h-5);

~~add ~~to, g~~~~

~~Add to, g # temp variable to~~
~~Add t1,~~

```
lw   $t2, 4($S1)    # puts g into a
                      register 4 places
                      away from S1

lw   $t3, 8($s1)    # loads h into
                      8 places from S1
```

~~tas~~ addi $t3, $t3, -5   # performs h=h-5
                                  in t3

```
add  $t1, $t2, $t3   #performs f = g+(h-5)
sw   $t1, 0($s1)     # stores results.
```

2.2) Solution

C statement for

add f, g, h
add f, i, f

Answer)

add f,g,h implies $f = g+h$

add f,i,f implies $f = i+f$

But we know $f = g+h$

So final statement would be:

$f = i+g+h;$

2.7 0xabcdef12

Ans) MIPS is big-endian [MSB in the h value has the lowest byte in memory]

0xab #comes first in memory
0xcd # is next and so on.
0xef
0x12

For Little Endian the LSB in the h value ~~has~~ ~~the~~ is Stored first. [oppositeofab]
So the sequence is

0x12
0xef
0xcd
0xab

2.8 0x abcdef12 into decimal

Ans>

Hex	~~Hex~~ Value	Powers	~~Hex~~ * Value * Power
2	2	16^0	$2 \times 16^0 = 2$
1	1	16^1	$1 \times 16^1 = 16$
f	15	16^2	$15 \times 16^2 = 3\ 840$
e	14	16^3	$14 \times 16^3 = 57,344$
d	13	16^4	$13 \times 16^4 = 8,51,968$
c	12	16^5	$12 \times 16^5 = 12\ 582912$
b	11	16^6	$11 \times 16^6 = 184\ 549,376$
a	10	16^7	$10 \times 16^7\ 268,435,4560$

Σ sum

0xabcdef12 = 28,82,400,018

2.9)

f	$s0
g	$s1
h	$s2
i	$s3
j	$s4

B[8] = A[i] + A[j];

Solution :

```
sll   $t0, $s3, 2        #$t0=4×i

sll   $t1, $4, 2         # t1 =4 *j

add   $t0, $t0, $s6      # address of A[i]
add   $t1, $t1, $s6      #address of A[i]
lw    $t0 , 0($t0)       # t0 = A[i]
lw    $t1 , 0($t1)       # t1 = A[j]
                         #we assigned & loaded.
add   $t0, $t1, $t0      # t0 = A[i] + A[j]

addi  $t1, $s7, 32       # address of B[8]
                           8 x 4 = 32
sw  $t0, 0($t1)          # B[8] = A[i] + A[j]
```