

EEEN 3449

Lab # 2 Spring 2009

Compute the Array Sum

Use the **Register Map** from Lab 1 to identify the register content and memory content.

For the Example 2.14 in your text, change the number of element in the array to 10, and the array is declared as 11, 12, 13, 14, 15, 16, 17, 18, 19, & 20.

Please do not overwrite the old version, keep all versions for review.

- Determine the intermediate sum within the loop for all ten iterations and record the data with the provided register map.
- Initialize the loop index, i to be 10, and decrement i as it goes through the loop. Modify the criterion for the program to stop. For $i = 10$ down to 1
- Repeat a) & b) such that the loop will compute sum as $0 + 20$ in the first iteration, and then perform $\text{sum} = 20 + 19$, etc. Add the elements backward.
- Modify your assembly program such that the array is located at \$1500 ~\$1509.
- Repeat parts b) & c) with the array declaring in the beginning of the assembly program.

```
N      EQU      10
total  ORG      $1500
      ORG      $2000      ; starting address of the program
      CLR      total      ; initialize total to zero
      LDX      #array     ; use index register X as the array pointer
      LDAB     #N         ; use accumulator B as the loop count
loop   BRCLR   0,X,$03,yes
      BRA      chkend
yes    INC      total      ; add 1 to the total
chkend INX      ; move the array pointer
      DBNE    b,loop
forever BRA     forever
array  DB      11,12,13,14,15,16,17,18,19,20
      END
```