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Computer Science 240-20

December 6, 2021

## 1. Screenshot of the code compiling

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.ORIG x3000

LEA R0, NoSort      ; Loads string location into R0
PUTS                ; Outputs "Unsorted" string
JSR OutputData      ; display the unsorted digits list to monitor

LD R1, FILE         ; Set R1 as the pointer to the memory address of the digits list FILE
AND R2, R2, #0      ; Clear R2 prepare for storing first digit 1 read from the FILE
AND R3, R3, #0      ; Clear R3 prepare for storing second digit 2 read from the FILE
AND R4, R4, #0      ; Clear R4 prepare for Comparing the value of first and second digit
ADD R5, R5, #n-1    ; R5 is the digits counter. Brings amount of data (n) from unsorted list output data, and puts into R5 as "n-1"

Sort LDR R2, R1, #0    ; Loads first digit value 1 from the memory address where R1 pointed to into R2
      LDR R3, R1, #1    ; Loads second digit value 2 from the memory address where R1 pointed to into R3
      BRZ EndPass      ; If no more data goto EndPass
      NOT R4, R3        ; NOT and ADD 1 operation make the 2's complement negative number into R4 from R3
      ADD R4, R4, #1    ; Makes R3 negative of itself for subtraction
      SUB R4, R4, R2     ; Subtracts second digit value 2 from first digit value 1
      BRP Swap         ; If first digit value bigger than the second digit value then swap it
      ADD R1, R1, #1    ; If difference is negative, no swap needed, increment pointer (R1) to next digit memory address in the FILE
      BRNZP Sort       ; Repeat the process until no more digit

Swap  STR R3, R1, #0    ; Write the swapped digits in R3 and R2 to the memory address which R1 point to
      STR R2, R1, #1    ; If difference is positive, swaps values
      ADD R1, R1, #1    ; Increments pointer
      BRNZP Sort       ; Continue to the sort process

EndPass LD R1, FILE     ; Re-initializes pointer (R1) for next pass of bubble sort process
        ADD R5, R5, #n-1 ; De-increments R5 (pass counter)
        BRP Sort       ; If pass counter still positive, sort again.
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Assembling C:\Users\JOSEPH\Downloads\BubbleSortProjStud.asm...  
Starting Pass 1...  
Pass 1 - 0 error(s)  
Starting Pass 2...  
Pass 2 - 0 error(s)

## 2. Screenshot of the code in the simulate

