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**190905522 CSE D 62**

**ES Lab End Semester Examination**

1. **The checksum of a set of numbers is the sum of all the elements of the set, ignoring the carry. Write and execute an ARM assembly language program to calculate the checksum of a set of numbers, available in the code memory as LIST, which is initialized with 0x28, 0x55, 0x26, 0x70, 0x45, 0x30, 0x62 and 0x85. The size of the set whose checksum is to be calculated is defined by the variable LENGTH. You are supposed to find the checksum by adding all the numbers up to LENGTH from the first element in the LIST, ignoring the carry. Store the checksum in the variable CHECKSUM.**

**CODE:**

AREA RESET,DATA,READONLY

EXPORT \_\_Vectors

\_\_Vectors

DCD 0X10001000

DCD Reset\_Handler

ALIGN

AREA MYCODE,CODE,READONLY

ENTRY

EXPORT Reset\_Handler

Reset\_Handler

LDR R0, =LIST

LDR R1, =LENGTH

LDR R2,[R1]

LDR R7, =CHECKSUM

MOV R5, #0

UP LDRB R3, [R0],#1

ADD R5,R5,R3

SUBS R2, #1

BNE UP ;if we have checked all counts of Length then exits the loop

STRB R5,[R7]

STOP B STOP

LIST DCB 0x28, 0x55, 0x26, 0x70, 0x45, 0x30, 0x62, 0x85 ;list to store all values

LENGTH DCD 4 ;variable for length

AREA MYDATA, DATA, READWRITE

CHECKSUM DCD 0 ;variable for answer checksum

END

**OUTPUT:**

The following screenshot is the output for when the value of the variable LENGTH is equal to 4. The answer is stored in variable CHECKSUM which is at memory location 0x10000000 and it is shown in the memory window shown below. The answer is as shown = 0x13 since we ignore the carry.

Graphical user interface, text, application, email

Description automatically generated

The following screenshot is the output for when the value of the variable LENGTH is equal to 6. The answer is stored in variable CHECKSUM which is at memory location 0x10000000 and it is shown in the memory window shown below. The answer is as shown = 0x88 since we ignore the carry. Otherwise, would’ve been 0x188.

Graphical user interface, text, application, email

Description automatically generated

**THE END**