

LAB NO: 3

**PROGRAMS ON ARITHMETIC
INSTRUCTIONS**

❑ Objectives:

Identify and use the instructions required to perform addition and subtraction.

Debug and trace the programs.

Write a program to add two 32 bit numbers available in the code memory. Store the result in the data memory

```
AREA RESET, DATA, READONLY
EXPORT __Vectors
```

```
__Vectors
```

```
DCD 0x40001000 ; stack pointer value when stack is empty
DCD Reset_Handler ; reset vector
```

```
ALIGN
```

```
AREA mycode, CODE, READONLY
```

```
ENTRY
```

```
EXPORT Reset_Handler
```

Reset_Handler

```
LDR R0, =VALUE1 ;pointer to the first value1  
LDR R1, [R0]      ;load the first value into R1  
LDR R0, =VALU2    ;pointer to the second value  
LDR R3, [R0]      ;load second number into r3  
ADDS R6, R1, R3    ;add two numbers and store the result in r6  
LDR R2, =RESULT  
STR R6, [R2]
```

STOP

B STOP

VALUE1 DCD 0X12345678 ; First 32 bit number

VALUE2 DCD 0XABCDEF12 ; Second 32 bit number

AREA data, DATA, READWRITE

RESULT DCD 0

END

Lab Exercises:

1. Write a program to add ten 32 bit numbers available in code memory and store the result in data memory.
2. Write a program to add two 128 bit numbers available in code memory and store the result in data memory.
Hint: Use indexed addressing mode.
3. Write a program to subtract two 32 bit numbers available in the code memory and store the result in the data memory.
4. Write a program to subtract two 128 bit numbers available in the code memory and store the result in the data memory.