University of Dhaka

Department of Computer Science and Engineering

CSE-3113: Microprocessor and Assembly Language Lab

Lab Report 3

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1 Task 1

Write a simple program to calculate: P = Q + R + S. Let Q = 2, R = 4, S = 5. Assume that r1 = Q, r2 = R, r3 = S. The result P will go in r0

```
main
        MOV r1, #2
        MOV r2, #4
        MOV r3, #5
        ADD r0,r1,r2
        ADD r0, r0, r3
```

The task was rather simple. Three registers - r1, r2 and r2 were loaded with constant values and ADD was used to sum up the values into r0

2 Task 2

Write a simple program to calculate: P = Q - R . Assume that r1 = Q, r2 = R, and Q¿R. The result P will go in r0.

```
sub
        MOV r1, #4
        MOV r2, #2
        SUB r0, r1, r2
```

Values were loaded up on the registers r1 and r2. SUB subtracts the values and keeps the signed numbers in r0

3 Task 3

4 Task 4

5 Task 5

Write a simple program to calculate: P = Q - R- S. Let Q = 12, R = 4, S = 5. Assume that r1 = Q, r2 = R, r3 = S. The result P will go in r0.

```
moresub
        MOV r1, #12
        MOV r2, #4
        MOV r3, #5
        SUB r0, r1, r2
        SUB r0, r0, r3
```

This was very similar to Task 2, except SUB was used twice to find r1 - r2 - r3

Write a simple program to calculate: P = Q x R . The result P will go in r0.

```
ml
        MOV r1, #12
        MOV r2, #4
        MUL r0, r1, r2
```

This task involved multiplication. There arises a concern for overflow with sufficiently large numbers. Bigger integers needs to be handled separately to prevent overflow

This problem is same as the problem 1. W = X + Y + Z . Once again, let X = 9, Y = 8, Z = 5 and we assume that r4 = X, r3 = Y, r2 = Z. In this case, you will put the data in memory in the form of constants before the program runs.

```
X EQU 9
Y EQU 8
Z EQU 58
addconstants
        MOV r4, #X
        MOV r3, #Y
        MOV r2, #Z
        ADD r0, r4, r3
        ADD r0, r0, r2
```

This task involved introducing constant values. X, Y and Z were assigned as aliases for some constants and were used later. The rest of the task is similar to Task 1.