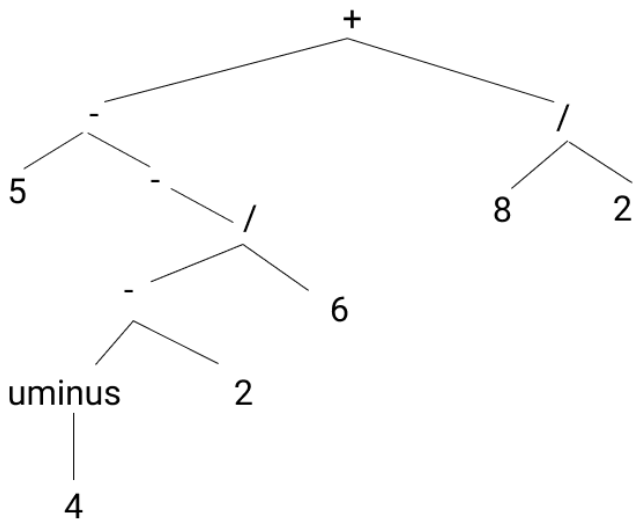
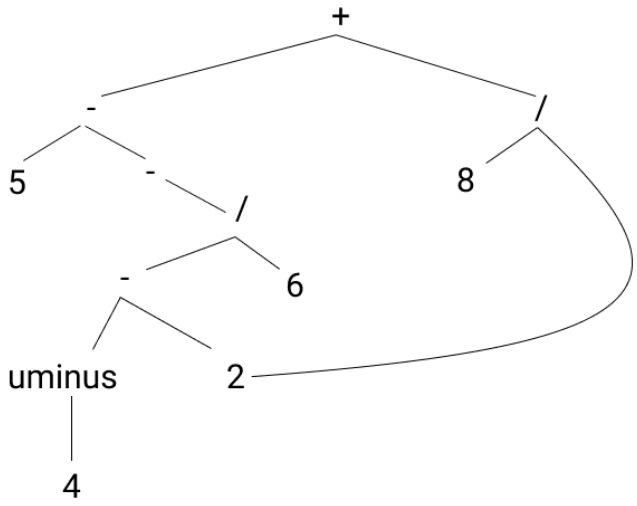
Muhammad Fadhil Achmadi
LK-01 – Compilation Technique
Assignment 3

1) A = 5 - (-4 - 2) / 6 + 8 / 2

- Tree



DAG



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- Quadraples

Step	Operation	Arg1	Arg2	Result
(0)	uminus	4		t1
(1)	-	t1	2	t2
(2)	/	t2	6	t3
(3)	-	5	t3	t4
(4)	/	8	2	t5
(5)	+	t4	t5	t6
(6)	=	t6		A

- Three Address Code

t1 = uminus 4
t2= t1 – 2
t3 = t2 / 6
t4 = 5 - t3
t5 = 8 / 2
t6 = t4+ t5
A = t6

- Triples

Step	Operation	Arg1	Arg2
(0)	uminus	4	
(1)	-	(0)	2
(2)	/	(1)	6
(3)	-	5	(2)
(4)	/	8	2
(5)	+	(3)	(4)
(6)	=	A	(5)

2) Program

```
a = 2;
b = 4;
c = 6;

do {
    while (a%2 == 0) {
        a= a - 1 ;
        b = b - 2;
    }
    if (a >= 10)
        c = b + 4;
    else
        b = b + 2;
        a = a – 1;
} while (b < 10);
```

Intermediate Code	
1	mov 2, , a
2	mov 4, , b
3	mov 6, , c
4	mod a, 2, T1
5	eq T1, 0, T2
6	jmpf T2, , 11
7	sub a,1, T3
8	mov T3, , a
9	sub b,2, T4
10	mov T4, , b
11	gte a,10, T5
12	jmpf T5, ,16
13	add b, 4, T6
14	mov T6, , c
15	jmp , , 20
16	add b,2, T7
17	mov T7, , b
18	sub a,1, T8
19	mov T8, , a
20	lt b, 10, T9
21	jmpt T9, , 4
22	…..

Machine Code	
1	MOV #2, R0
2	MOV R0, a
3	MOV #4, R1
4	MOV R1, b
5	MOV #6, R2
6	MOV R2, c
7	MOV #2, R3
8	MOD a, R3
9	EQ #0, R3
10	JMPF R3, 15
11	SUB #1, R0
12	MOV R0, a
13	SUB #2, R1
14	MOV R1, b
15	MOV #10, R4
16	GTE R0, R4
17	JMPF R4, 22
18	ADD R1, R5
19	ADD #4, R5
20	MOV R5, c
21	JMP 26
22	ADD #2, R1
23	MOV R1, b
24	SUB #1, R0
25	MOV R0, a
26	MOV #10, R6
27	LT R1, R6
28	JMPT R6, 7

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