

1) a. $x = a + b * c : t_1 = b * c \Rightarrow$ LD R1, b
 $x = a + t_1$ LD R2, c
 MUL R1, R1, R2
 LD R2, a
 ADD R1, R1, R2
 ST x, R1

b. $a[i] = b[c[i]] : t_1 = 4 * i \Rightarrow$ LD R1, i
 $t_2 = 4 * c[i]$ MUL R1, R1, 4
 $a[t_1] = b[t_2]$ LD R2, C(R1)
 MUL R2, R2, 4
 LD R2, b(R2)
 ST a[R1], R2

2. a) LD 0, i : 2
 MUL R0, R0, 8 : 2
 LD R1, a(R0) : 2
 ST b, R1 : 2
8

b. LD R0, c : 2
 LD R1, i : 2
 LD R1, a(R0) : 2
 ST b, R1 : 2
8

c) LD R0, p : 2
 LD R1, x : 2
 ST 0(R0), R1 : 2
6

d.

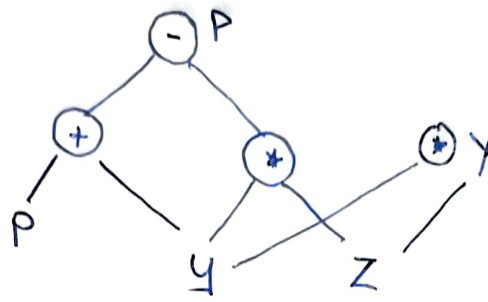
3. DAG:

$$x = y * z$$

$$w = p + y$$

$$y = y * z$$

$$p = w - z$$



4. $x = a + b * c$

$$t1 = b * c$$

$$t2 = a + t1$$

$$x = t2$$

TARGET CODE

RD

AD

R1

R2

a

b

c

t1

t2

x

LD R1, b

LD R2, c

MUL R1, R1, R2

LD R2, a

ADD R1, R1, R2

ST x, R1

b

b

t1

t1

t2

t2, x

c

c

a

a

a

a, b, R1 c

a b, R1 c, R2

a b c, R2 R1

a, R2 b c R1

a, R2 b c

a, R2 b c

R1

R1, x