psudo direct ldrb

psudo inediate. ldr, =

within raye, = move

out of raye, literal.

6.1 - 1

current pc = 24 $\xrightarrow{+8=32}$ offset = 11 = 0x B

add r4, pc, # 0x B ← 0x 2B = 43

add r4, r4, # 0x0

r4 ← 0x 2B

6.1 - 2

ldrb r0, [r2, # 0x28]

ldrb r1, [r2, # 0x27]

0	E 3A 0 2 0 01	mov r2, #1	
1	E 5D 2 0 028	ldrb r0, in2	-1
2	E 5D 2 1 027	ldrb r1, in1	3
3	E 1E 0 1 00 1	mvn r1, r1 ;@ take 1's comp	
4	E 0 8 1 1 00 2	add r1, r1, r2 ;@ add 1 for 2's comp	
5	E 0 8 0 0 00 1	add r0, r0, r1	

adrl r4, output

0x2B

6	E	28	F	4	00B	add	r4, pc, #0x8		
7	E	28	4	4	000	add	r4, r4, #0x0		
8	E	5C	4	0	000	strb	r0, [r4, #0]		
9	E	3A	0	F	0	08	mov	pc, #2*w1	

there are adrl added
↳ 2more add instruction

lab1

R0 → 0x21 → (+8) → 0x29 → 41

R1 → 0x20 → (+8) → 0x28 → 40

6.2-1

current pc = 24+8 = 32

⇒ offset = 10

42

add r4, pc, #0x0A

add r4, r4, #0xFF

0x129 → 297

r4 = 42 → 255

6.2-2

adrl r4, output 129

6	E	28	F	4	00A	add	r4, pc, #0x12		

7 | E 28 4 4 0FF | add r4, r4, #0xFF |

7. `mov pc, #2*wl` — pc ← 8.

literal Pool:

literal 30 : dcw 0x00000030 [00 00 00 08]

ldr pc, literal30 — ldr pc, [r2, #0x2F]

0x30 ↓ 0d48 — 1 → 0d47

E 5 9 2 F 02F — ldr pc, literal30

7.1 move pc, (r2, lsl #3)

1) 1

2) E 1 A 0 F 18 2 — move pc, r2, lsl #3

3) pc ← 0x8

7.2 adr pc, loop

1) sub pc, pc, #0x24

24

0x8

↓

8 36 → offset = 36

+8

44

2)

E 2 4 F F 0 24 sub pc, pc, #0x 24

3) adrl should use when adr is out of raye.
It costs extra incessery instruction

E 2 4 F F 0 24 sub pc, pc, # 0x24

E 2 8 F F 0 0 0 add pc, pc, # 0x0

7.3) ldr pc, = 8

1) E 3A 0 F 0 08 mov pc, # 8

7.4) ldr pc, = loop pc ← 8.

literal Pool:

literal 0 : dcw 0x 00000008 [00 00 00 08]

ldr pc, literal0 ldr pc, [pc, #0x 4]

0x 30 0x24

↓
0d 48

36+8 → 4
=44

E59FF004 ldr pc, literal 30

0x30 → 48

7.5 b loop

EA → B (Branch)

put the address into PC

signed_immediate 24 = x

left-shift twice:

Add PC +8 (0x2C)

PC = PC + imm' (im' = imm expanding shift left twice ×2)

0x8 ↓ 0x2C ↓

0b8 44 → imm' = -36 : (4) ← twice, shift right.

→ imm = -9 → 0xFF

EA FFFFF7

9: 1001

thp 0110

+1 0111