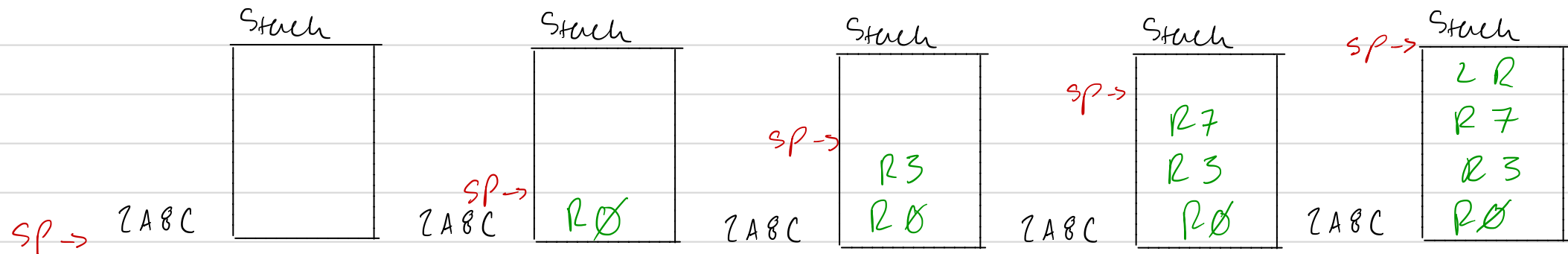
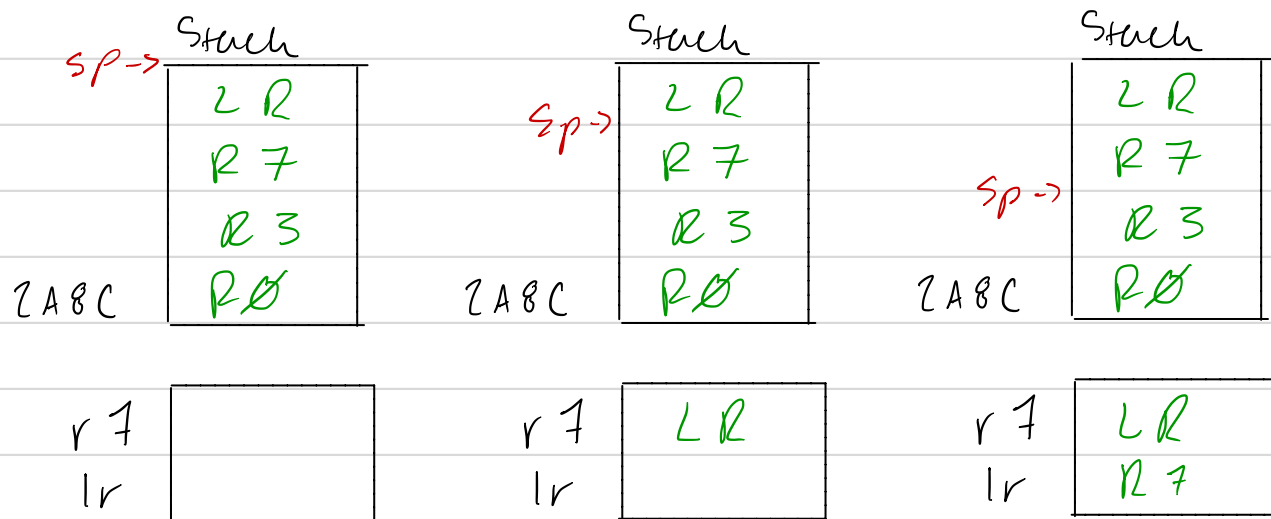


a) PUSH {lr, r7, r0, r3} → PUSH {r0, r3, r7, lr}
 = STMDB {r0, r3, r7, lr}



b) LDMIA sp!, {lr, r7} = LDMIA sp!, {r7, lr}



12513

R_2, R_0, R_1

\rightarrow

$R_1 - R_0$

$$3 - 129 = -126$$

R_0	1000 0001
R_1	0000 0011
R_2	X

$$129 \quad 1000 \quad 0001 \quad | \quad = -127_{(10)}$$

$$3 \quad 0111 \quad 1111 \quad | \quad = 127_{16}$$

a) unsigned

$$1000 \quad 0001 \rightarrow \begin{array}{r} \begin{array}{c} \\ 0 \end{array} \begin{array}{c} \\ 1 \end{array} \\ + \begin{array}{c} \\ 0 \end{array} \begin{array}{c} \\ 0 \end{array} \\ \hline 1000 \quad 0010_2 = 130_{10} \end{array}$$

b) Signed

$$1000 \quad 0001 \rightarrow \begin{array}{r} \begin{array}{c} \\ 0 \end{array} \begin{array}{c} \\ 1 \end{array} \\ + \begin{array}{c} \\ 0 \end{array} \begin{array}{c} \\ 0 \end{array} \\ \hline 1000 \quad 0010 \rightarrow \begin{array}{r} 1000 \quad 0010 = -126_{10} \\ 0111 \quad 1110_2 = 126_{10} \end{array}$$

Overflow

ADDS R2, R2, #-812

R2 [FFFF FE00]

N	C	Z	V
1	0	0	0

TEQ R2, R4, LSL #8

$$\begin{array}{r}
 \begin{array}{cccccccc}
 1111 & 1111 & 1111 & 1111 & 1111 & 1110 & 0000 & 0000 \\
 \oplus & 00000000 & 00000000 & 0000 & 0000 & 0000 & 0000 & 0000 \\
 \hline
 1111 & 1111 & 1111 & 1111 & 1111 & 1110 & 0000 & 0000
 \end{array}
 \end{array}$$

R2 [FFFF FE00]

N	C	Z	V
1	0	0	0

BIC R4, #0xFF5

R4 [0000 0000]

No Change

MOVS R2, #0xFF, ROR #8

FF $\xrightarrow{\text{ROR} \#8}$ FF000000

R2 [FF00 0000]

N	C	Z	V
1	1	0	0

MVN R2, #0xFF, ROR #6

FF $\xrightarrow{\text{ROR} \#6}$

$$\begin{array}{ccccccc}
 1111 & 1100 & \dots & 0011 & & & \\
 0000 & 0011 & \xrightarrow{F} & 1100 & = & 03FF & FFFC
 \end{array}$$

R2 [03FF FFFC]

BIC R2, R2, #0

R2 [03FF FFFC]

No Change

$$\begin{array}{r}
 1110 \\
 + \quad 1 \\
 \hline
 1111 \\
 \text{EOR } 1111 \\
 \hline
 0000
 \end{array}$$

$$\begin{array}{r}
 1100 \\
 + \quad 1 \\
 \hline
 1101 \\
 + \quad 1 \\
 \hline
 1110 \\
 + \quad 1 \\
 \hline
 1111
 \end{array}$$

$$\begin{array}{r}
 1000 \\
 + \quad 1 \\
 \hline
 1001 = 3
 \end{array}$$