

If overflow happens, use C2
 If no overflow happens, use S2 as C2.

Δ If overflow, adopt C2

$$\begin{array}{r}
 111 \quad N \quad -1 \\
 + 100 \quad N \quad -4 \\
 \hline
 11011 \quad P \quad -5 \\
 \hline
 -8 \quad 2+1 = -5
 \end{array}$$

If no overflow

$$\begin{array}{r}
 111 \quad N \quad -1 \\
 + 101 \quad N \quad -3 \\
 \hline
 100 \quad N \quad -4 \\
 \hline
 100
 \end{array}$$

①

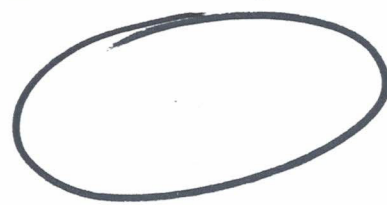
$$\begin{array}{r} \Delta \quad 001 \quad P \quad 3 \\ \quad 001 \quad P \quad 3 \\ \hline \underline{0110} \quad N \quad 6 \end{array}$$

$$C_2 = \underline{\quad}$$

$$C_1 = \underline{\quad}$$

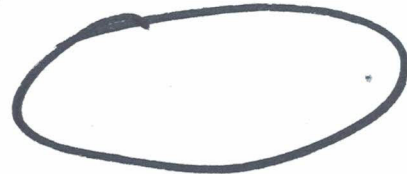
$$\begin{array}{r} \Delta \quad 111 \quad N-1 \\ \quad 001 \quad P \quad 1 \\ \hline \underline{0000} \quad 0 \end{array}$$

if $OV == 1$ \rightarrow overflow happens



digit $\leftarrow \{C_2, S_2, S_1, S_0\}$

if $OV == 0$



digit $\leftarrow \{S_2, S_1, S_0\}$

(2)

$$\Delta C_2 C_1 = 00$$

$$\begin{array}{r} 000 \quad P \\ + 000 \quad P \\ \hline 000 \quad P \end{array}$$

No overflow

$$\begin{array}{r} 100 \quad N \\ + 000 \quad P \\ \hline 01 \quad N \end{array}$$

No overflow

$$\begin{array}{r} 100 \quad N \\ + 100 \quad N \\ \hline 00 \quad P \end{array}$$

Impossible

$$C_2 C_1 = 01$$

$$\begin{array}{r} 000 \quad P \\ + 000 \quad P \\ \hline 01 \quad N \end{array}$$

~~OV~~ OV

$$\begin{array}{r} 100 \quad N \\ + 000 \quad P \\ \hline 0 \quad P \end{array}$$

No OV

$$\begin{array}{r} 100 \quad N \\ + 100 \quad N \\ \hline 0 \quad P \end{array}$$

Impossible

$$C_2 C_1 = 10$$

$$\begin{array}{r} 0 \ 12 \ 12 \\ + 0 \ 11 \ 12 \\ \hline 1 \end{array}$$

Impossible

$$\begin{array}{r} 1 \ 12 \ 12 \\ + 0 \ 11 \ 12 \\ \hline 1 \end{array}$$

Impossible

$$\begin{array}{r} 1 \ 12 \ 12 \\ + 1 \ 11 \ 12 \\ \hline 1 \ 0 \end{array}$$

OV

$$C_2 C_1 = 11$$

$$\begin{array}{r} 0 \ 12 \ 12 \\ + 0 \ 11 \ 12 \\ \hline 1 \end{array}$$

Impossible

$$\begin{array}{r} 1 \ 12 \ 12 \\ + 0 \ 11 \ 12 \\ \hline 1 \end{array}$$

No OV

$$\begin{array}{r} 1 \ 12 \ 12 \\ + 1 \ 11 \ 12 \\ \hline 1 \ 1 \end{array}$$

No OV

C_2	C_1	OV
0	0	0
1	0	0
1	1	0

$$\text{OV} \neq C_2 \wedge C_1$$

(4)