

이름: 정민성

학번: 2015251165

표 1 2진수 덧셈

문 제	$11\ 0111_2 + 1010_2$	$1001_2 + 1101_2$	$1\ 1111_2 + 1111_2$
풀 이	$\begin{array}{r} 11\ 0111_2 \\ 1010_2 \\ \hline 100\ 0001_2 \end{array}$	$\begin{array}{r} 1001_2 \\ 1101_2 \\ \hline 1111_2 \end{array}$	$\begin{array}{r} 1\ 1111_2 \\ 1111_2 \\ \hline 10\ 1110_2 \end{array}$
정 답	$100\ 0001_2$	$1111_2$	$10\ 1110_2$
문 제	$10\ 1000_2 + 1\ 0101_2$	$100\ 1011_2 + 101\ 1011_2$	$1\ 0111\ 1101_2 + 10\ 1000\ 0010_2$
풀 이	$\begin{array}{r} 10\ 1000_2 \\ 1\ 0101_2 \\ \hline 11\ 1101_2 \end{array}$	$\begin{array}{r} 100\ 1011_2 \\ 101\ 1011_2 \\ \hline 1010\ 0110_2 \end{array}$	$\begin{array}{r} 1\ 0111\ 1101_2 \\ 10\ 1000\ 0010_2 \\ \hline 11\ 1111\ 1111_2 \end{array}$
정 답	$11\ 1101_2$	$1010\ 0110_2$	$11\ 1111\ 1111_2$

표 2 2진수 뺄셈

문 제	$11\ 0111_2 - 1010_2$	$10\ 1101_2 - 1110_2$	$1011_2 - 101_2$
풀 이	$\begin{array}{r} 11\ 0111_2 \\ 1010_2 \\ \hline 10\ 1101_2 \end{array}$	$\begin{array}{r} 10\ 1101_2 \\ 1110_2 \\ \hline 1\ 1111_2 \end{array}$	$\begin{array}{r} 1011_2 \\ 101_2 \\ \hline 110_2 \end{array}$
정 답	$10\ 1101_2$	$1\ 1111_2$	$110_2$
문 제	$1000_2 - 11_2$	$10\ 1101_2 - 1110_2$	$101\ 1011_2 - 100\ 1011_2$
풀 이	$\begin{array}{r} 1000_2 \\ 11_2 \\ \hline 101_2 \end{array}$	$\begin{array}{r} 10\ 1101_2 \\ 1110_2 \\ \hline 1\ 1111_2 \end{array}$	$\begin{array}{r} 101\ 1011_2 \\ 100\ 1011_2 \\ \hline 1001_2 \end{array}$
정 답	$101_2$	$1\ 1111_2$	$1001_2$

이름:

학번:

표 3 2진수 곱셈, 나눗셈

문 제	$1100_2 \times 1101_2$	$1001_2 \times 10101_2$	$101101_2 \times 101_2$
풀 이	$\begin{array}{r} 1100 \\ \times 1101 \\ \hline 1100 \\ 1100 \\ 0000 \\ 1100 \\ \hline 10011100 \end{array}$	$\begin{array}{r} 1001 \\ \times 10101 \\ \hline 1001 \\ 0000 \\ 1001 \\ 0000 \\ 1001 \\ \hline 10111101 \end{array}$	$\begin{array}{r} 101101 \\ \times 101 \\ \hline 101101 \\ 000000 \\ 101101 \\ \hline 11100001 \end{array}$
정 답	$10011100_2$	$10111101_2$	$11100001_2$
문 제	$1001\ 0011_2 \div 1011_2$	$111\ 0000_2 \div 1011_2$	$110\ 0100_2 \div 1001_2$
풀 이	$\begin{array}{r} 1101 \\ 1011 \overline{) 10010011} \\ \underline{1011} \\ 01113 \\ \underline{0111} \\ 1100 \\ \underline{1011} \\ 011 \end{array}$	$\begin{array}{r} 1000 \\ 1011 \overline{) 1110000} \\ \underline{1011} \\ 1000 \\ \underline{1000} \\ 000 \end{array}$	$\begin{array}{r} 1010 \\ 1001 \overline{) 1100100} \\ \underline{1001} \\ 110 \\ \underline{1001} \\ 100 \end{array}$
정 답	$\begin{array}{l} 1101 \\ \text{나머지 } 011 \end{array}$	$\begin{array}{l} 1000 \\ \text{나머지 } 000 \end{array}$	$\begin{array}{l} 1010 \\ \text{나머지 } 100 \end{array}$

표 4 2의 보수 덧셈 / 오버플로우 발생 여부

문 제	$5_{10} - 14_{10}$	$5_{10} - 7_{10}$	$88_{10} - 96_{10}$
풀 이	$\begin{array}{l} 5 = 2^2 + 2^0 = 101_2 \\ 14 = 8 + 4 + 2 = 1110_2 \\ -14 = (000111) = 10010_2 \\ \text{C}_0 = 0, \text{C}_1 = 1 \\ \begin{array}{r} 101 \\ + 10010 \\ \hline 10111_2 = 01001 = -9 \end{array} \end{array}$	$\begin{array}{l} 5 = 2^2 + 2^1 = 1101_2 \\ 7 = 4 + 2 + 1 = 111_2 \\ -7 = 1001_2 \\ \begin{array}{r} 1101 \\ + 1001 \\ \hline 1110_2 \end{array} \\ (1101_2) - (111_2) = 0110_2 = 6 \end{array}$	$\begin{array}{l} 88 = 64 + 16 + 8 = 1011000_2 \\ 96 = 64 + 16 + 16 = 1100000_2 \\ -96 = (1100000) = 0100000_2 \\ \begin{array}{r} 1011000 \\ + 0100000 \\ \hline 1111000_2 = 1111000_2 = 88 \end{array} \end{array}$
정 답	$10111_2 = -9$ $\text{C}_1 = \text{C}_2 \text{ 이므로 overflow 발생}$	$1110_2 = 6$ $\text{C}_1 = \text{C}_2 \text{ 이므로 overflow 발생}$	$1111000_2 = 88$ $\text{C}_1 = \text{C}_2 \text{ 이므로 overflow 발생}$
문 제	$1110_2 + 0011_2$	$0110\ 1011_2 + 0011\ 0110_2$	$1011\ 0010_2 + 1110\ 0011_2$
풀 이	$\begin{array}{r} 1110 \\ + 0011 \\ \hline 10001_2 \end{array}$ $\text{C}_1 = \text{C}_2 \text{ 이므로 overflow 발생}$	$\begin{array}{r} 01101011 \\ + 00110110 \\ \hline 10100001 \end{array}$ $\text{C}_1 \neq \text{C}_2 \text{ 이므로 overflow 발생}$	$\begin{array}{r} 10110010 \\ + 11100011 \\ \hline 11000101 \end{array}$ $\text{C}_1 = \text{C}_2 \text{ 이므로 overflow 발생}$
정 답	$10001_2$ $\text{오버플로우 발생 (O, X)}$	$10100001_2$ $\text{오버플로우 발생 (O, X)}$	$11000101_2$ $\text{오버플로우 발생 (O, X)}$