

- 1) Assembly language isn't portable as it's specific to the architecture to whatever system you're writing it for. It is also very close to machine language in that there is a 1 to 1 relationship between assembly language instructions and machine language instructions, which would make it extremely long to write and difficult to maintain large programs.

Assn 2

$$\begin{array}{r} 2) \quad A \quad 11110101 \\ B \quad 10110110 \\ \hline 110100001 \end{array}$$

$$\therefore \boxed{110100001}$$

$$\begin{array}{r} 3) \quad \begin{array}{ccccccc} -5 & 101 & 010 & 011 \\ -2 & 910 & 101 & 110 \\ +4 & 100 & 100 & 100 \\ \hline -3 \end{array} \end{array}$$

$$\boxed{1101} \rightarrow \begin{array}{r} 0010 \\ +1 \\ \hline 0011 = 3 \end{array} \therefore \boxed{-3}$$

$$\begin{array}{cccccccc} 4) & 4 & 5 & 7 & 8 & 9 & A & 0 \\ & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ & 0100 & 0101 & 0111 & 1000 & 1001 & 1010 & 0000 \end{array}$$

$$\therefore \boxed{100010101110001001100010100000}$$

$$\begin{array}{r} 5) \quad -39 \\ \frac{39}{16} \rightarrow 2 \text{ R } 7 \\ 16 \rightarrow 0 \text{ R } 2 \\ \Rightarrow 0027 \end{array}$$

$$\begin{array}{r} 15 \ 15 \ 15 \ 15 \\ -0 \ 0 \ 2 \ 7 \\ \hline F \ F \ D \ 8 \\ +1 \\ \hline \boxed{FFD9} \end{array}$$

$$6) \quad a) \quad 10010101 \Rightarrow \begin{array}{r} 01101010 \\ +1 \\ \hline 01101011 \\ 2^6 + 2^5 + 2^3 + 2^2 = 107 \end{array} \therefore \boxed{-107}$$

$$b) \quad 01110111$$

$$2^6 + 2^5 + 2^4 + 2^3 + 2^2 = \boxed{119}$$

7. $\begin{array}{r} \overset{1}{A} \overset{1}{B} \overset{1}{C} \\ + \overset{1}{D} \overset{1}{E} \overset{1}{F} \\ \hline 18A0 \end{array}$ $\begin{array}{r} \overset{12}{H} \overset{12}{I} \\ \hline \overset{27}{J} \overset{16}{K} \end{array} 1R11$ $\begin{array}{r} \overset{11}{L} \overset{11}{M} \\ \hline \overset{1}{N} \overset{26}{O} \end{array} = 1R10$ $\begin{array}{r} \overset{10}{P} \overset{10}{Q} \\ \hline \overset{1}{R} \overset{24}{S} \end{array} = 1R8$

$\begin{array}{r} - 0F51 \Rightarrow \\ + FOAF \\ \hline X095A \end{array}$ $\begin{array}{r} \overset{11}{T} \overset{11}{U} \overset{11}{V} \\ \hline \overset{26}{W} \overset{16}{X} \end{array} = 1R10$ $\begin{array}{r} \overset{10}{Y} \overset{10}{Z} \\ \hline \overset{1}{AA} \overset{24}{AB} \end{array} = 1R5$

$\therefore \boxed{95A}$

g) $-11 \Rightarrow \frac{11}{2} = 5R1$
 $\frac{11}{2} = 2R1$
 $\frac{11}{2} = 1R0$
 $\frac{11}{2} = 0R1$ $1011 \Rightarrow 0100$

$\begin{array}{r} +1 \\ 0101 \end{array}$ unable to store
in 4-bit word require
5th bit for sign bit

Also because 4-bit 2s comp
only store values between
 -2^{n-1} to $2^{n-1}-1$
 -2^3 to 2^3-1
 -8 to $+7$ which excludes -11

9) $-2^{n-1} = -2^{182}$

$$10) (\neg x \wedge \neg y \wedge z) \vee (\neg x \wedge y \wedge \neg z) \vee (x \wedge \neg y \wedge \neg z)$$



