Study Questions (Chapter 02 – Part 2)

1. Pick a decimal number between -128 and 127.
   Convert this number into the 8-bit sign-and-magnitude form.
   Convert the number back from the 8-bit sign-and-magnitude to decimal to verify.

2. Pick a decimal number between -128 and 127.
   Convert this number into the excess-127 form.
   Convert the number back from the 8-bit excess-127 to decimal to verify.

3. Pick two decimal numbers between -128 and 127.
   Convert these two numbers into 8-bit 2's complement form.
   Add these two converted numbers.
   Check if an overflow occurred or not.
   Convert the result back from the 2's complement system to decimal to verify.

4. Pick two decimal numbers between -128 and 127.
   Convert these two numbers into 8-bit 2's complement form.
   Subtract the 2nd converted number from the first converted number.
   Check if an overflow occurred or not.
   Convert the result back from the 2's complement system to decimal to verify.

5. Pick a decimal number between -16 and 15.
   Convert this number into 2's complement form.
   Perform arithmetic shift-left to the converted number three times.
   Convert the number back from the 8-bit 2's complement to decimal to verify.

6. Pick a decimal number between 16 and 127.
   Convert this number into 2's complement form.
   Perform arithmetic shift-left to the converted number three times.
   Convert the number back from the 8-bit 2's complement to decimal to verify.

7. Pick a decimal number between -128 and -17.
   Convert this number into 2's complement form.
   Perform arithmetic shift-left to the converted number three times.
   Convert the number back from the 8-bit 2's complement to decimal to verify.

8. Pick a decimal number between -128 and 127.
   Convert this number into 2's complement form.
   Perform arithmetic shift-right to the converted number three times.
   Convert the number back from the 8-bit 2's complement to decimal to verify.