HW7

3.1

5ED4 4 -4 = 0, D – A = 3, E – 7 = 7, 5 – 0 = 5

- 07A4

A: 5730

3.3

5ED416 = 0101 1110 1101 01002

It allows you to work with larger numbers while taking up less space.

3.9

151 (Binary) 1001 0111 (Two’s Compliment) 0110 1001

+ 214 +1101 0110 0010 1010

1001 0011

Answer: 1001 0011 (binary)

147 (Decimal)

127 (Saturated)

3.14

Hardware:

8 × 2 × 4 = 64 units of time to complete multiplication

Software:

8 × 3 × 4 = 96 units of time to complete multiplication

3.15

7 adds x 4 units of time each = 28 units of time

3.27

In the half-precision there is 1 bit for the sign bit. The exponent field is reduced to 5-bits and the mantissa field is reduced to 10-bits. This leads to a smaller range and precision for the fraction.

Sign = 1

Exponent = 15-3 = 12 = 011002

Mantissa = 0100,0000,002

IEEE Representation: 1 01100 0100,0000,00