Decimal Multiplication Example

www.decimalarith.info

Digit A = 32638D7EA4C68003hex

Exponent 110010011 = 403 ; As bias is 398 so real exponent is 403-398 = 5 in decimal

Coefficient 0001110001101011111101010010011000110100000000000011 which equals 10000000000003dec

Digit B = 338000000000019hex

Exponent 110011100 = 412 bias is 398 so real is 412-398 equal 14

Coefficient 0000000000000000000000000000000000000000000011001 which equals 25dec

Calculation exponent

110010011(403)+ 110011100 (412) – 110001110 (398) = 110100001 (417)

Calculation significand

0001110001101011111101010010011000110100000000000011 X

0000000000000000000000000000000000000000000011001

=0101100011010001010111100001011101100010100000001001011 which equals 25000000000000075 in decimal

The significands are multiplied to produce IP_C = 2500000000000075.
In parallel, the biased exponents are added and the bias is subtracted to produce IP_{EXP} = 403 + 412 - 398 = 417
If IP_C exceeds the result's precision, p, rounding is needed.
In this example, IP_C has 17 digits, and the precision for decimal64 is p=16 digits, so it is necessary to round off one digit and increment IP_{EXP} by one. Depending on the rounding mode, the rounded result has been set.