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Process of adding two normalized IEEE 754 floating point numbers:

1. unpack the numbers into separate sign exponent and mantissa values. Some versions will use two’s complement for the mantissa, to avoid separate sign bits. [1]
2. Shift the significand with the more negative exponent right, incrementing its exponent with each shift until, the exponents match. [2]
3. add the (now aligned) mantissas. [1]
4. normalize the number, by shifting the sum left or right to align the leading bit. Change the exponent of the result by the number of normalization shifts [1]
5. round the result according to the rounding mode and renormalize if rounding changes result [1]

Example: [2]

[1]: <https://www.cset.oit.edu/~lynnd/cst130/ho/Lec06slides.pdf>

[2]: <https://www.quora.com/How-do-I-add-IEEE-754-floating-point-numbers>