

Multiply problem 3.14

Software

Each iteration has 3 steps (test and add, shift multiplier and shift multiplicand). Since there are 8 iterations, we have $8 \times 3 = 24$ steps in total. This means the total time needed is $24 \times 4 = 96$ time units.

Hardware

Shifting turns into one step which only has (test and add, then shift) per iteration. This means that we have 16 steps in total (2×8) and the total time needed is $16 \times 4 = 64$ time units.