multiply() vs bitMultiply()

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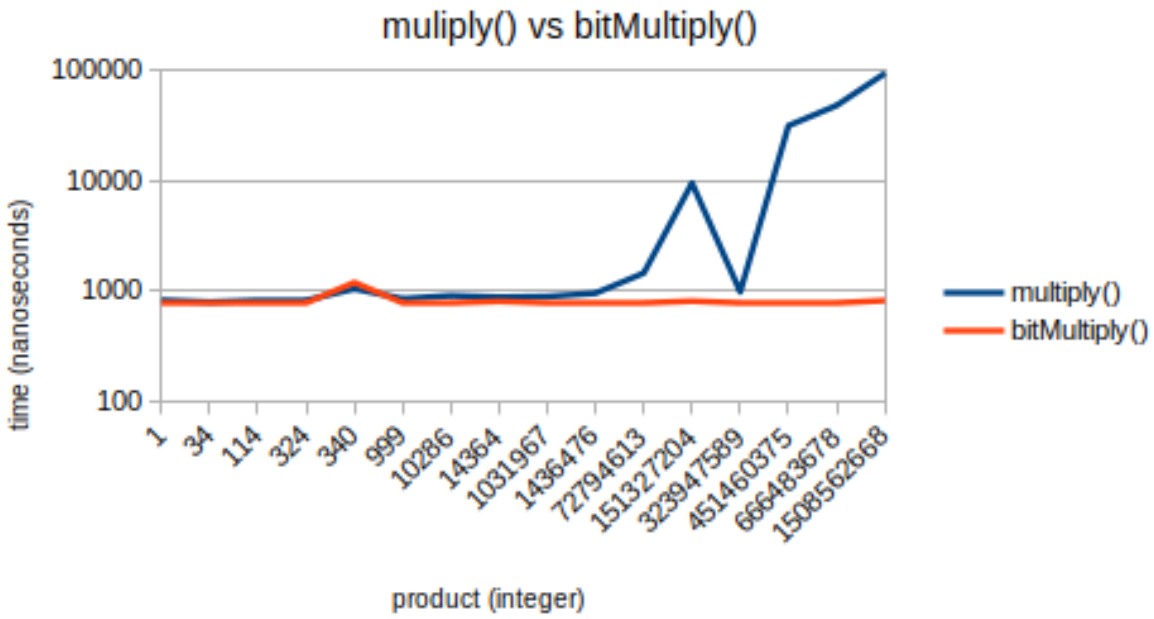
“multiply()”

Multiplication is achieved in this function by repeatedly adding the large number to a product initialized at 0. This approaches is O(min(operand1,operand2)). Meaning the program will execute the lower inputted number of times.

“bitMultiply()”

Multiplication is achieved in this function by taking the two numbers, operand1 and operand2, and repeatedly doubling operand1 and halving operand2, if operand2 is odd then add operand1 to the result. This method gives us a much shorter run-time. This is shown in the table below.



It’s easy to tell that as the numbers get larger and larger bitMultply() requires significantly less instructions to find the same answer.

Conclusion

BitMultiply is a much faster algorithm than multiply.