

The JETS Challenge

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Challenge 90 – The ABC Challenge

Problem:

The first electronic computer was named the ABC after its inventers, the Atanasoff and Berry Computer. It was developed in 1942 by John Atanasoff (who wrote the basic design on the back of a napkin) and graduate student Clifford Berry at Iowa State University. They got a grant for \$850 to build the prototype. The final product was the size of a desk, weighed 700 pounds, and included over 300 vacuum tubes and a mile of wire. Moore's Law (named after the founder of Intel) predicted in 1965 that the number of transistors on a single computer chip would double every 24 months. Today's state-of-the-art chip can perform 6.4 billion operations per second.

If Moore's Law has held true for the past 65 years, how many operations per second was the ABC capable of performing?

Solution:

Today

6.4×10^9 ops/second

transistors double every
24 months (2 yrs.)

$65 \text{ years} / 2 = 32.5 \text{ times}$

thus, $x \times 2^{32.5} = 6.4 \times 10^9$ ops/second

$x = 1.05367$ ops/second