

# AI is shortening the modernization process of the over 60-year-old COBOL programming language, causing IBM shares to plummet.

Anthropic claims AI could accelerate COBOL modernization, causing IBM's stock to plummet the most in 25 years. Is this a threat to mainframes or a transformative opportunity?

For a long time, the tech world has implicitly understood that the systems running the global financial system rely on archaic, incomprehensible, and nearly irreplaceable code. Now, AI is beginning to make that problem achievable – and the stock market has immediately sent a 'practical reminder' to one of the oldest names in the tech industry.

IBM shares just experienced their sharpest decline in over 25 years, plummeting 13% after AI startup Anthropic announced its Claude Code tool could accelerate the modernization of COBOL, a costly and time-consuming area of work that has contributed significantly to IBM's consulting revenue for many years.

In a blog post, Anthropic stated that modernizing a previous COBOL system required 'an army of consultants spending years mapping out the operational processes.' They argued that tools like Claude Code can now automate the discovery and analysis phase – which accounts for a large portion of the workload in COBOL migration projects. That statement alone was enough to prompt investors to immediately hit the sell button.



## **The influence of COBOL**

To understand why the market reaction was so strong, we need to look at the deep-rooted nature of COBOL. Hundreds of billions of lines of COBOL code are still running in manufacturing environments every day, operating core systems in finance and the public sector. In the US alone, this language handles approximately 95% of ATM transactions.

The bigger problem isn't the source code itself, but the people who understand it. The COBOL programmer workforce is shrinking as the generation that built these systems has largely retired. This shortage of talent has made COBOL modernization expensive for decades, and has made large-scale consulting contracts – a 'gold mine' for IBM and rivals like Accenture and Cognizant – almost irreplaceable.

Anthropic argues that AI is turning the tide. Claude Code can map dependencies across thousands of lines of code, document operational processes, identify risks faster than analysts, and provide insightful data to support decision-making. According to the company, engineering teams can now modernize COBOL systems in just a few quarters instead of years.

## **IBM was one step ahead.**

What the market may have overlooked is that IBM itself has been pursuing this argument for some time. About three years ago, the company proposed using AI to convert COBOL to Java and launched the 'watsonx Code Assistant for Z' product to serve that goal.

CEO Arvind Krishna stated in July 2025 that the company's AI programming assistant for mainframes was receiving strong acceptance. A large percentage of customers used it to understand their existing COBOL codebase and identify areas needing modernization.

IBM quickly defended its position, asserting that its mainframe platform still ensures top-level performance and security, regardless of whether the programming language is COBOL or another. Analysts also suggest that the panic reaction may be overreacting. According to experts at Evercore ISI, customers have long had the option to move away from mainframes, but they remain committed to the platform – suggesting that the risk of being replaced may be exaggerated.

## **A broader trend is emerging.**

It wasn't just IBM that was affected. Accenture and Cognizant shares also fell, indicating that investors are questioning the entire consulting model centered around modernizing legacy systems, not just the mainframe segment.

Last week, cybersecurity stocks also sold off after Anthropic announced Claude Code Security – a tool for scanning security vulnerabilities in codebases. This pattern is repeating itself: every time AI announces a new capability, the market immediately reassesses potential revenue streams and reacts almost instantaneously.

IBM wasn't silent. Rob Thomas, the company's Senior Vice President and Chief Commercial Officer, emphasized that 'coding' and 'platform modernization' are two completely different things. The gap between the two is where many businesses struggle.

According to him, the value of the IBM mainframe system lies not in COBOL but in the entire integrated stack underneath: the z/OS operating system, transaction processing architecture, secure encryption against quantum computers, and decades of hardware and software optimization. Code translation tools cannot touch these elements.

He also pointed out a noteworthy detail: approximately 40% of COBOL's actual volume runs on Windows, Linux, and other distributed platforms, not mainframes. In other words, the narrative being labeled 'IBM mainframe' is actually a matter of distributed systems in general.

Several IBM customers have spoken out. Royal Bank of Canada uses Watsonx Code Assistant for Z to map dependencies and build modernization roadmaps for core applications. The National Organisation for Social Insurance says it reduced its time analyzing legacy COBOL code by up to 94% – from eight hours to about 30 minutes.

Whether the recent sell-off was a rational or instinctive reaction, one thing is clear: AI is making the modernization of COBOL economically viable for the first time in decades. The question IBM is asking – and the market has yet to answer definitively – is whether this is a threat to their business model, or a catalyst for the transformation they themselves are leading.

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