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Explain the significance of Babbage's calculating engine and the role of Ada Lovelace.

Charles Babbage invented a calculating machine, which he called the difference engine, and it was the first of its kind. It was designed to be able to calculate math problems faster than humans, and mimic other human mental actions like playing chess and other games. Unlike modern computers, this was big, bulky, consisted of gears and other parts, and was completely powered by hand cranks.

Unfortunately for Babbage, he lost funding for his machine after a decade because it started to cost too much. The machine was too expensive for the government to keep funding, and lost much of its support in the process.

Afterwards he tried to develop something he called the analytical machine, something that was an improvement of the difference engine. It used punch cards akin to memory storage devices and to process information.

Fortunately for him, he caught the attention of Ada, countess of Lovelace. Ada was a mathematical prodigy and was interested in Babbage's devices. She was also able to note, despite being able to mimic the human thought process, that his machines were actually incapable of autonomous thought, thinking on their own, and had to be programmed and prompted before getting a response. Babbage, on his part, actually never said anything about his machine being able to think for itself, but he did let other people believe that and not correct them.

While Babbage did not believe he was successful, he did pioneer computing machines. He was the forefather of modern computers and programming, his ideas influenced what people believed a machine had the potential of doing, and that machines could have potential to think autonomously.