



Heroes of Progress, Pt. 49: Babbage and Lovelace

Lesson Overview

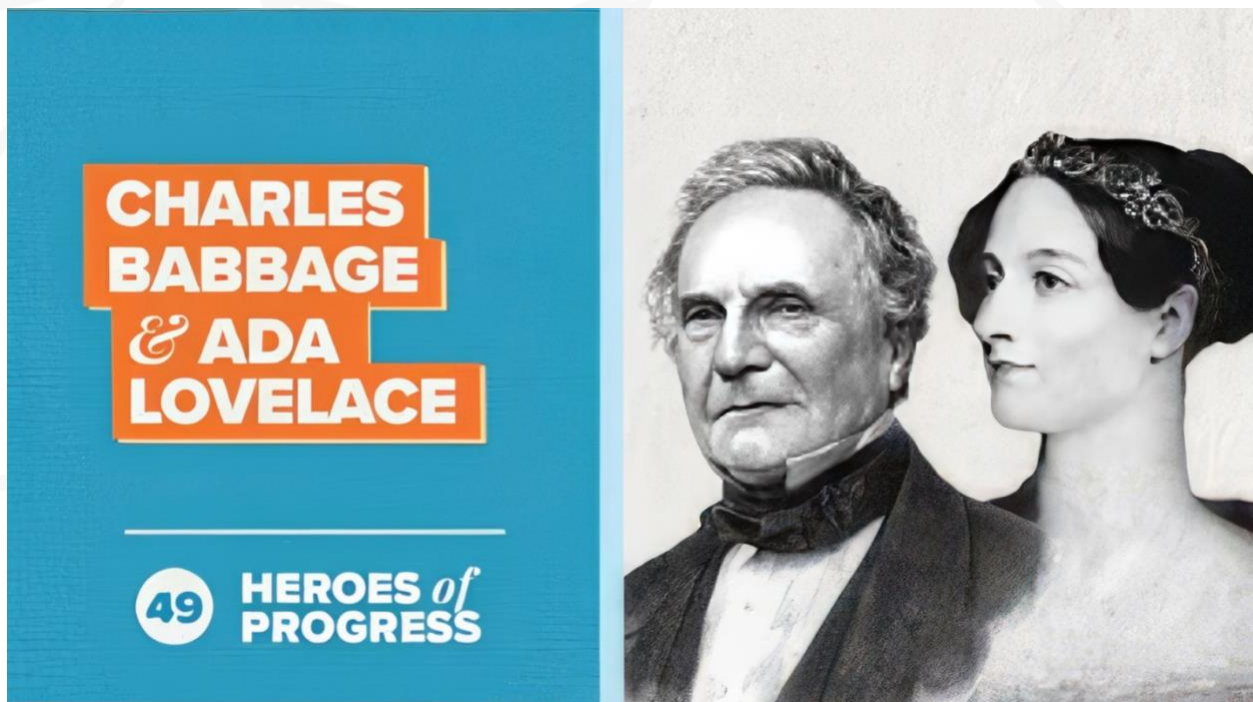
Featured article: [Heroes of Progress, Pt. 49: Babbage and Lovelace](#) by
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In this lesson, students will learn about the lives and legacies of two 19th-century mathematicians and computing pioneers: Charles Babbage and Ada Lovelace. These two English polymaths conceived the first automatic computer and recognized that it could have applications beyond mere calculation. Together, they laid the groundwork for modern computing.



Warm-up

Have you ever heard of Babbage and Lovelace? Before reading the article, watch [this video](#) about them.



After watching the video, in partners, small groups, or as a whole class, answer these questions:

- Which two machines did Babbage design?
- Why is Lovelace called the “first programmer”?
- Why do you think Babbage’s machines were never built in his lifetime?

Questions for reading, writing, and discussion

Read the [article](#), and then answer the following questions:

- Which problem was Babbage trying to solve by creating a machine to perform calculations automatically?
- Think about the historical context. What were some possible motivations for the British government granting funds to construct Babbage’s “Difference Engine”?
- In your own words, summarize the main difference between the “Difference Engine” and the “Analytical Engine.”
- In your opinion, what formed the bond of friendship between Babbage and Lovelace?
- Which innovations were in place by the mid-1800s that allowed Babbage to give a seminar on his Analytical Engine at the University of Turin?

Institution	Which innovations were in place by the mid-1800s that allowed Babbage to give his seminar at the University of Turin?
Social	
Political	
Cultural	
Economic	
Technological	

- Think about Ada Lovelace's notes on Babbage's Turin lecture. How was Lovelace a visionary thinker about technology? Explain in detail.
- Why weren't Babbage's machines built? What lessons can you learn about human relations from his experience?
- What are the legacies of Babbage and Lovelace? In other words, why is their work important to our lives today?

Extension Activity/Homework

Delve Deeper and Imagine an Alternate Reality

Babbage and Lovelace were geniuses. Because of Babbage's prickly personality, his computers were never built during his lifetime. No one knew if they would work.

Today, two full-scale re-creations of Babbage's "Difference Engines" exist. One machine is in the London Science Museum, and the other is displayed at the Computer History Museum in Mountain View, California. In this video, a museum docent explains how the computer works. [Watch the video](#) and respond to the prompt below.



All the materials, machinery, and knowledge to build Babbage's machines were available in the mid-1800s. Imagine if Charles Babbage had been better at human relations. Imagine that he convinced influential people to fund his project and that his machines had been built in the mid-1800s.

How would world history differ if the British had had vast computing power by the late 19th century?

Think about when nuclear power, space flight, and artificial intelligence would have been developed. Visualize how the history of the 20th century would have been different. Use your imagination and write a two- to three-paragraph essay imagining this alternate reality.