

# Important Figures in Computing History

## Ada Lovelace



Ada Lovelace (1815 – 1852)

### Who was Ada Lovelace?

- She was an English mathematician
- She published the first ever algorithm
- She was the world's first computer programmer

# Important Figures in Computing History

## Why is Ada Lovelace important?

- She produced the world's first computer program
- She was one of the first people to believe that machines could do more than perform calculations



A young Ada

## Her early years

- Born 10<sup>th</sup> December 1815
- The daughter of famous poet, Lord Byron



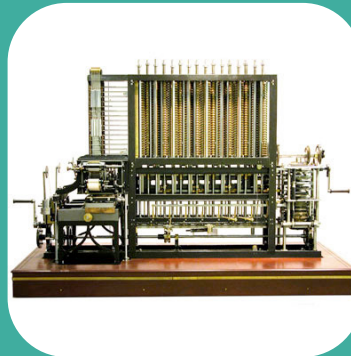
Father, Lord Byron

- Ada's mother had a keen interest in science and mathematics, and insisted that she study mathematics, which was unusual for a woman at that time
- Ada showed a gift for mathematics early on



# Important Figures in Computing History

- Ada developed her passion for mathematics with private tutors
- She met the brilliant mathematician and inventor Charles Babbage in 1833 when she was eighteen
- He nicknamed her the 'Enchantress of Numbers'
- Babbage showed her the designs for his Difference Engine and, later, the Analytical Engine – a machine powered by steam that would perform calculations



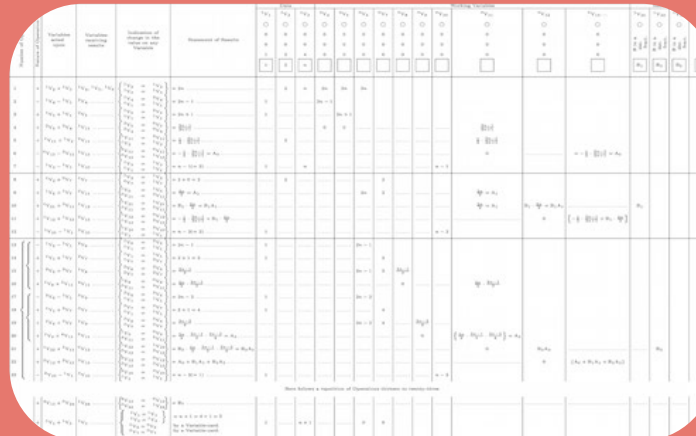
The Difference Engine  
Science Museum, London

- Married William King in 1835
- They had three children
- She died on 2<sup>th</sup> November 1852

# Important Figures in Computing History

## Ada Lovelace – Algorithms and programming

- In 1843, Ada published an article in the English Science Journal about Babbage's Analytical Engine
- Ada described how codes could be used for the Analytical Engine so that it could interpret letters and symbols along with numbers
- She also wrote about how the machine could handle repetition in instructions and that it could have uses beyond just calculating, like creating pictures and music (graphics/audio)
- Ada produced the step-by-step set of instructions (algorithm) for using the Analytical Engine - it is for this reason that she is known as the world's first computer programmer



The diagram is a complex flowchart titled 'Sketch of a system of operations for the purpose of calculating Bernoulli Numbers'. It consists of a grid of boxes, each containing a number and a mathematical expression or instruction. The boxes are arranged in a way that shows the sequence of operations for calculating Bernoulli numbers. The expressions include various mathematical symbols and functions, such as  $B_n$ ,  $B_{n-1}$ ,  $B_{n-2}$ ,  $B_{n-3}$ ,  $B_{n-4}$ ,  $B_{n-5}$ ,  $B_{n-6}$ ,  $B_{n-7}$ ,  $B_{n-8}$ ,  $B_{n-9}$ ,  $B_{n-10}$ ,  $B_{n-11}$ ,  $B_{n-12}$ ,  $B_{n-13}$ ,  $B_{n-14}$ ,  $B_{n-15}$ ,  $B_{n-16}$ ,  $B_{n-17}$ ,  $B_{n-18}$ ,  $B_{n-19}$ ,  $B_{n-20}$ ,  $B_{n-21}$ ,  $B_{n-22}$ ,  $B_{n-23}$ ,  $B_{n-24}$ ,  $B_{n-25}$ ,  $B_{n-26}$ ,  $B_{n-27}$ ,  $B_{n-28}$ ,  $B_{n-29}$ ,  $B_{n-30}$ ,  $B_{n-31}$ ,  $B_{n-32}$ ,  $B_{n-33}$ ,  $B_{n-34}$ ,  $B_{n-35}$ ,  $B_{n-36}$ ,  $B_{n-37}$ ,  $B_{n-38}$ ,  $B_{n-39}$ ,  $B_{n-40}$ ,  $B_{n-41}$ ,  $B_{n-42}$ ,  $B_{n-43}$ ,  $B_{n-44}$ ,  $B_{n-45}$ ,  $B_{n-46}$ ,  $B_{n-47}$ ,  $B_{n-48}$ ,  $B_{n-49}$ ,  $B_{n-50}$ ,  $B_{n-51}$ ,  $B_{n-52}$ ,  $B_{n-53}$ ,  $B_{n-54}$ ,  $B_{n-55}$ ,  $B_{n-56}$ ,  $B_{n-57}$ ,  $B_{n-58}$ ,  $B_{n-59}$ ,  $B_{n-60}$ ,  $B_{n-61}$ ,  $B_{n-62}$ ,  $B_{n-63}$ ,  $B_{n-64}$ ,  $B_{n-65}$ ,  $B_{n-66}$ ,  $B_{n-67}$ ,  $B_{n-68}$ ,  $B_{n-69}$ ,  $B_{n-70}$ ,  $B_{n-71}$ ,  $B_{n-72}$ ,  $B_{n-73}$ ,  $B_{n-74}$ ,  $B_{n-75}$ ,  $B_{n-76}$ ,  $B_{n-77}$ ,  $B_{n-78}$ ,  $B_{n-79}$ ,  $B_{n-80}$ ,  $B_{n-81}$ ,  $B_{n-82}$ ,  $B_{n-83}$ ,  $B_{n-84}$ ,  $B_{n-85}$ ,  $B_{n-86}$ ,  $B_{n-87}$ ,  $B_{n-88}$ ,  $B_{n-89}$ ,  $B_{n-90}$ ,  $B_{n-91}$ ,  $B_{n-92}$ ,  $B_{n-93}$ ,  $B_{n-94}$ ,  $B_{n-95}$ ,  $B_{n-96}$ ,  $B_{n-97}$ ,  $B_{n-98}$ ,  $B_{n-99}$ ,  $B_{n-100}$ .

Ada's diagram for computation of Bernoulli Numbers