**Ada Lovelace- Biography of a Software Engineer**

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For this essay I decided I wanted to write it on a female Software Engineer as I believe as a woman in STEM it is important to research and find accomplished woman in STEM, so who better to do my essay on than the woman considered the world’s first computer programmer. Ada Lovelace, (born 1815, died 1852), only lived to the age of 36 years but accomplished so much for technology and software engineering as we know it.

Ada Lovelace, or Augusta-Leigh Lovelace, was born to Lord George Golden Byron and Lady Annabella Byron on the 10th of December 1815. Her father, Lord Byron, was said to be one of “Britain’s greatest romantic poet” but was known for his many affairs and terrible moods. He was extremely disappointed when Ada was born female as he expected her to be a “glorious boy”. Ada’s mother Lady Byron was deeply religious and married Lord Bryon as she believed it was her duty from God to save his virtue. She left Lord Bryon when Ada was only five weeks old, they signed the “deed of separation” on the 21st of April. Lady Bryon make several allegations of Lord Bryon infidelity, particularly one surrounding an incestual relationship between him and his half-sister forcing Lord Bryon to leave England for Greece five days later and never return. Ada never had a relationship with her estranged father and did not see a portrait of him until her twentieth birthday, eleven years after he died. Her mother was her primary parental figure although they were never close in relationship. Lady Bryon posed maternal love in the eyes of the public, but Ada was mainly cared for by her maternal grandmother Judith Hon.

Ada’s mother was obsessed with her ex-husband and feared Ada would turn out like her father. Her mother had her watched by close friends that Ada nicknamed “Furies”, they would report to her mother any signs of moral deviation often falsifying and exaggerating their stories as stated by Ada. She pushed her towards science and mathematics over the arts to steer her away from her father’s lifestyle. She received an unconventional Cambridge University education in her home and found a liking towards mathematics. She was taught by social reformer William Frend, physician William King and tutored by Mary Somerville, the Scottish astronomer and mathematician. Somerville was one of the first woman to be invited to join the Royal Astronomers Society. At age twelve Ada decided she wanted to fly so she studied the anatomy of birds and began to create wings for herself using different fabrics and materials. She wrote a book on her findings called Flyology. She had an affair with her tutor at seventeen years old, she tried to elope with him but was recognised by a relative of the tutor and her mother was contacted. Her mother buried this incident as not to have another scandal associated with her name.

Ada was very well-liked and popular in society due to her “bright mind”. In 1835, at the age of 19, she married William, 8th Baron King, becoming Lady King. William was later appointed Earl of Lovelace giving Ada the name is now so well-known by. She had three children, Bryon, Anne Isabella (Annabella) and Ralph Gordon. Ada was sick many of her childhood years with headaches and she was infected with the measles in 1929, she also became very ill for months after the birth of Annabella. Ada had a half sister Medora Leigh who was born out of an affair between her late father and his half sister Augusta Leigh. Ada had many rumours of affairs and gambling addiction surrounding her. She is said to have lost more than £3000 on horses in the late 1940’s. She even attempted to create a mathematical model for a successful large bet, this failed and left her owing thousands to the syndicate.

Ada met the “father of computers”, Charles Babbage, in 1833 and he began to mentor her. He once referred to her as “The Enchantress of Numbers”. He paid for her tuition in advanced mathematics, she was taught by University of London Professor Augustus de Morgan. Professor de Morgan introduced her to advanced calculus topics such as the “numbers of Bernoulli” and to his various mathematical inventions but the one that caught Ada’s eye was the difference engine and she was invited to view its construction. The difference engine could automatically preform calculations. Lovelace valued metaphysics as much as mathematics and she believed the intuition and imagination were critical to effectively use different mathematical and scientific concepts. She dubbed her approach as “poetical science”

In 1842, she translated a French transcript of one of Menabrea’s lectures into English with assistance from Babbage. While translating this she added her own detailed ideas on Babbage’s computing machines that ended up being more substantial than Menabrea’s transcript itself, they were about 3 times the size of the original article and were published in the 1843 edition of Taylor’s Scientific Memoirs. They even explained the difference between the Analytical Engine and the original Difference Engine. This is how Ada made history. In her notes she wrote an algorithm for the Analytical Engine to compute Bernoulli numbers, this was the first published algorithm ever specifically tailored implementation on a computer yet sadly never got the opportunity to be tested as Baggage’s Analytical Engine was never completed. Ada’s notes on Babbage’s Analytical engine were republished in 1953 in B.V. Bowden’s “Faster than Thought: A Symposium on Digital Computing Machines.” Based on this work Ada is consider one of the first computer programmers. Lovelace also dismissed Artificial intelligence in these notes, her objections have been subject to many debates over the years.

Lovelace and Babbage had a minor falling out when their paper was published as Babbage tried to pawn off his statement that critiqued the government’s treatment of his engine as an unsigned preface which led to it being seen as a joint declaration. Taylor’s Scientific Memoirs ruled that the statement needed to be signed, causing Babbage to ask Lovelace to withdraw from the paper completely which Ada furiously refused and although their relationship suffered, they reconciled before she passed.

Even though Ada is referred to as the first computer programmer there is some controversy over this stating that even though Lovelace “made a considerable contribution to publicizing the Analytical Engine, there’s no evidence that she advanced the design or theory of it in anyway.” Many people believe it was in fact Babbage himself who was the first computer programmer as Bromley noted several dozen sample programs prepared by Babbage between 1837 and 1840. Doron Swade referred to Lovelace in a lecture as a “promising beginner” rather than a mathematic genius. Stefan Wolfram defended Lovelace’s contributions. He did acknowledge that Babbage certainly helped but that “there’s nothing as sophisticated -or as clean- as Ada’s computation of Bernoulli number’s” and that she was definitely “the driver” of her work. Wolfram goes on to say that Lovelace's main achievement was to take from Babbage's correspondence "a clear exposition of the abstract operation of the machine” which is something which Babbage never did.

Ada died tragically young. She fell ill in the 1850’s to uterine cancer, this illness lasted several months before killing her on the 27th of November 1852, merely weeks after her 36th birthday, she died the same age as her late father. During the time of her illness, her mother Annabella took control of her life and who she saw, leading to her not seeing many close confidants and friends before her death. Annabella also convinced Ada to have a religious transformation and repent her previous conduct making Annabella her executor. O n the 30th of August 1852 Ada confessed something to her husband causing him to leave her bedside and not see her again before her death. It is still unknown as to what she confessed. She was buried beside her father, upon her request, in St Mary Magdalene Church in Huckall, Nottinghamshire. A memorial plaque, written in Latin, paying tribute to the incredible scientist, mathematician, and pioneering force she was is in the chapel attached to Horsley Towers.

Ada Lovelace was an extremely talented woman and a huge influence into how we the computers we know today. Even though she died at an extremely young age, she achieved so much despite her many faults and ailments. She is, to me and many others, the first computer programmer. Given the time and the fact Lovelace was a female it’s incredible to see what she achieved. I think she is hugely influential to our female generation as a reminder of what women in STEM can achieve, as many jobs and careers in computers are mainly male dominated. It’s incredible to see that a woman in such an oppressive time could achieve so much in so few years. It’s strange to think what she else could have achieved if she lived for a little longer.

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