

Ada Lovelace

-the first computer programmer

a story about curiosity

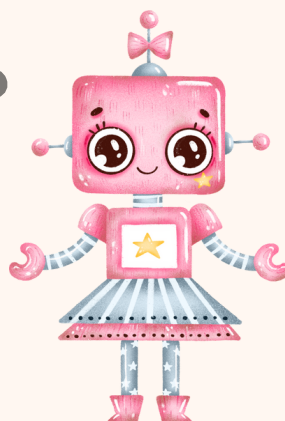
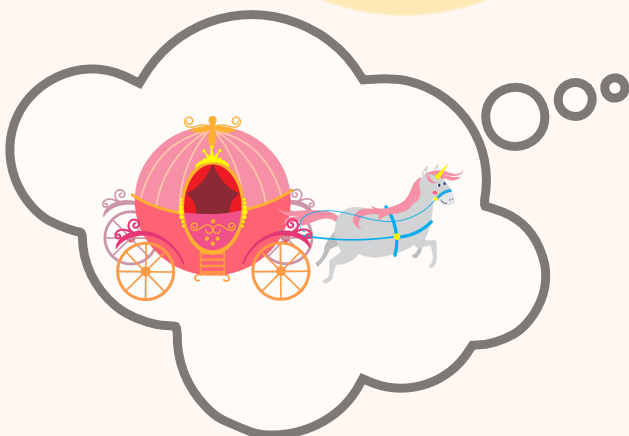
**Imagine year
1827 in London.**

The world
seemed very
different from
ours today.

People wore big,
puffy dresses
with huge
sleeves and hats.



There were no telephones, no TV, cars, and no
airplanes.



I think they must
have used a carriage,
like Cinderella.

Now, picture a young girl named Ada, the daughter of the famous poet Lord Byron and her mother, Anabelle Byron.

At that time Ada was just 12 years old, but she had a dream - she wanted to fly!

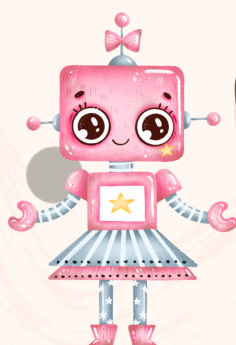
Fascinating...
If it is possible for a
bird to fly, than
maybe people could
do it one day.



She pondered how things worked, especially the wings of birds.

In fact, she began writing a book called "**Flyology**" where she shared her exciting ideas about how humans might someday learn to fly like the birds in the sky.

Ada's imagination knew no bounds!



Wow! What an amazing dream...

Have in mind, the first flying machine was invented 75 years later!

Ada's mother was very clever and loved math and science. She saw Ada's love for learning and introduced her to a magical world of mathematics.

As Ada grew up, she became more and more fascinated by math. She studied hard and learned about numbers, shapes, and even how to write secret codes. Ada's mind was like a sponge, soaking up all the knowledge she could find.

Is that
mathematics?!

I know. She is so
weird.
It is not a thing girl
should do. Especially
one of her origin.

1800s in England, were a time when girls were not often encouraged to learn about math and science.

So, how come Ada chose to follow that path? After all, she was much like the other girls of her time.

The answer lies in someone very important in her life—her mother.

Is there anything you
would like to do, but
others disapprove it or
don't think you will be
capable of doing?



Fortunately, Ada's mother was a **strong supporter of her dreams**. She actively encouraged her education and intellectual pursuits.

When Ada was 17, her mother arranged a special visit for her to attend a grand party where she would have a remarkable encounter with a renowned inventor named Charles Babbage.

Mr. Babbage was working on a marvelous machine called the "Analytical Engine." It was a machine that could do math calculations much faster than any person.

Ada was amazed!

Ada and Mr. Babbage became friends.

Little did they know that this friendship would change the course of history and lead to amazing discoveries in the world of computers.



Everything becomes easier when you have people who support you. Surround yourself with friends who do just that.



In 1835, Ada married William King, who became the Earl of Lovelace three years later, making her **the Countess of Lovelace**. They had three children, and even though most wives and mothers of the time worked only in the home, Ada Lovelace continued her work with Babbage.

One of her tasks was to translate an article on Babbage's Analytical Engine written by another author, from French to English.

During that process, Ada was adding her own notes to the document, signing them "A.A.L."

Oh my, my notes are three times the length of the original article!



In her notes Ada explained how the machine could be programmed to do all sorts of tasks, not just math.

$$\begin{aligned} & \lim_{x \rightarrow 2} \frac{x^2 - 4}{x - 2} = \lim_{x \rightarrow 2} \frac{(x-2)(x+2)}{x-2} = \lim_{x \rightarrow 2} (x+2) = 4 \\ & \frac{d}{dx} \sin x = \cos x \\ & \frac{d}{dx} \cos x = -\sin x \\ & \frac{d}{dx} e^{ax} = ae^{ax} \\ & \frac{d}{dx} \ln x = \frac{1}{x} \\ & \frac{d}{dx} x^n = nx^{n-1} \\ & \frac{d}{dx} \frac{u}{v} = \frac{v \frac{du}{dx} - u \frac{dv}{dx}}{v^2} \\ & \frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x) \\ & \frac{d}{dx} \sin^{-1} x = \frac{1}{\sqrt{1-x^2}} \\ & \frac{d}{dx} \cos^{-1} x = \frac{-1}{\sqrt{1-x^2}} \\ & \frac{d}{dx} \tan^{-1} x = \frac{1}{1+x^2} \\ & \frac{d}{dx} \cot^{-1} x = \frac{-1}{1+x^2} \\ & \frac{d}{dx} \sec^{-1} x = \frac{1}{x\sqrt{x^2-1}} \\ & \frac{d}{dx} \csc^{-1} x = \frac{-1}{x\sqrt{x^2-1}} \\ & \frac{d}{dx} \operatorname{arctanh} x = \frac{1}{1-x^2} \\ & \frac{d}{dx} \operatorname{artanh} x = \frac{1}{1-x^2} \\ & \frac{d}{dx} \operatorname{arcsech} x = \frac{-1}{x\sqrt{1-x^2}} \\ & \frac{d}{dx} \operatorname{arcsch} x = \frac{-1}{x\sqrt{1-x^2}} \end{aligned}$$

In her notes she compared the Analytical Engine to a **weaving machine** because, just like a weaving machine creates intricate patterns with threads, the Analytical Engine used special cards with holes to create complex calculations.

She thought it was fascinating how both machines used instructions to make something special happen, whether it was beautiful patterns or solving math problems.



Lovelace concluded that the engine could also follow patterns—or codes—not only to calculate numbers, but to form letters or music, too.

This is a very basic explanation of computer programming.

It is often said that **no knowledge is wasted**. Many breakthroughs in science, technology, and other fields have occurred because someone drew upon knowledge from seemingly unrelated areas.



It seems that being a woman in a field often dominated by men, was Ada Lovelace's strength.

It gave her **a unique perspective** to the Analytical Engine. Her love for weaving helped her understand the intricate patterns of it, just as she understood the patterns of threads in a loom.

The same applies to you: your love for Barbie, unicorns, and dancing doesn't mean you won't excel in tech.

Remember: **being unique and having diverse interests can be a superpower in the world of technology.**



Ada Lovelace's notes were forgotten for a long time. But in 1953, her notes were printed again in a book about computers.

This book explained how computers work by following instructions, and it turns out that, **even before the first computer was made, Ada had thought of the idea for a computer language.**

Because of Ada's clever ideas and her love for learning, people now call her **the world's very first computer programmer.**

Did you notice that through this story, Ada Lovelace, even though she lived in a different time, taught us many things?

Here are some important lessons she shared:



- **Find someone who supports and encourages you.** That is like having a magical friend who helps you shine and reach for the stars. It's a wonderful feeling that makes your dreams feel even closer and your adventures even more fun.
- **Anyone, regardless of their gender, can excel in STEM*** field. Don't let close-minded people's prejudices influence you.
- **Never stop seeking knowledge**, since you never know what the future will bring.
- **Keep pursuing your dreams**, even if some people think they're unusual.
- Never overlook the strength that comes from **working together** with people who share same interests and values.
- **Every bit of knowledge is valuable** - everything you learn, no matter how seemingly unrelated or insignificant it may appear, can be valuable and useful in some way in the future
- **Use your talents and skills to make the world a better place**, just as Ada used her love for math to pave the way for future generations of computer scientists and engineers

And so, the story of Ada Lovelace reminds us that no dream is too big, and no question is too small.



And the best part is:

Ada was no different than you.

Or your best friend.

You too can bring fresh ideas and new perspectives that can change the (tech) world for the better. Embrace your passions, explore the unknown, and one day, you might become a trailblazer in the world of tech, just like Ada.



And remember:

Stay curious.

Curiosity is changing the world... Be brave to ask how something works and to explore new things.