■ THE QUANTUM JOURNAL ■

Quantum Computing in Plain English

The Beginner's Guide to the Technology Changing Our World

"You don't need a physics degree to understand the future — you just need to know where to look."

By R. Kenner French

Amazon #1 Best Selling Author · ModernMillions.ai

TheQuantumJournal.com · August 2026

INTRODUCTION

Welcome to the Quantum Age

Quantum computing sounds like science fiction, but it is a very real technology being built today by companies like IBM, Google, Quantinuum, and Pasqal. Billions of dollars are being invested by governments and tech giants around the world, and the pace of progress in 2026 has been remarkable.

Most explanations of quantum computing are filled with complex physics equations and confusing jargon. This guide is different. Our goal at **The Quantum Journal** is to explain quantum technology in plain, simple English — the kind a curious twelve-year-old could follow. You do not need a physics degree to understand what is happening. You just need a bit of curiosity.

By the end of this short guide, you will understand what a quantum computer is, how it works, and why it matters for the future of medicine, energy, and cybersecurity. Let's dive in.

PART 1

What Is a Quantum Computer?

The Regular Computer: Bits

To understand quantum computers, we first need to look at the device you are using right now. Your laptop, smartphone, and the servers that run the internet are all 'classical' computers. They process information using **bits**. A bit is like a tiny light switch that can only be in one of two positions: **Off (0)** or **On (1)**.

Every email you send, every video you watch, and every app you use is just millions of these 0s and 1s flipping back and forth incredibly fast. Regular computers are extraordinarily good at this — but they have limits when problems become truly enormous.

The Quantum Computer: Qubits

A quantum computer uses **qubits** (short for quantum bits). Instead of being just a switch that is strictly Off or On, a qubit can hold a combination of both states while the computer is working.

Think of a coin. Lying flat on a table, it is either heads (1) or tails (0).
But when you spin it in the air — what is it?
It is a blur of both possibilities at once. It only becomes heads or tails when it lands.

A qubit is that spinning coin.

This ability to hold multiple possibilities at once allows a quantum computer to explore many different solutions to a problem simultaneously, rather than checking them one by one. For certain hard problems, this is a game-changer.

PART 2

The Two Magic Words

When people talk about quantum computing, they usually use two intimidating words. Let's break them down simply.

1. Superposition

Superposition is the 'spinning coin' effect. It means a quantum object can hold a blend of possibilities before it is measured. In a regular computer, if you want to find the way out of a maze, the computer has to try Path A, hit a dead end, back up, try Path B, and so on — one path at a time.

A quantum computer using superposition can, in a sense, pour water into the maze and explore the entire structure at once, helping it find the best path dramatically faster for the right kinds of problems.

2. Entanglement

Entanglement is a special connection between two or more qubits. When qubits are entangled, what happens to one instantly tells you something about the other — even if they are far apart.

Imagine two magic dice. No matter how far apart you take them,
whenever you roll a six on the first die, the second always lands on six too.

That invisible link is entanglement.

Because of this connection, quantum computers can link information together in ways regular computers simply cannot replicate. Entanglement is also the foundation of quantum communication and the future quantum internet.

PART 3

Why Are They So Hard to Build?

If quantum computers are so powerful, why doesn't everyone have one? The answer is that quantum information is incredibly fragile. A qubit is easily disturbed by heat, vibration, stray electricity, or even a passing cosmic ray. When a qubit gets disturbed, the spinning coin crashes to the table and the calculation is ruined. Scientists call this **decoherence**.

To keep qubits stable, engineers have to build extreme environments:

- **Super-cooling:** Many quantum computers (like those from IBM and Google) must be cooled inside special refrigerators to nearly absolute zero — colder than deep space.
- **Vacuum chambers:** Other designs use lasers to trap individual atoms inside perfect vacuums, isolating them from any outside interference.
- **Error correction:** Because errors still happen, scientists group many physical qubits together to act as one highly reliable 'logical qubit' — like a team of proofreaders catching each other's mistakes.

In July 2026, Quantinuum demonstrated the first universal topological quantum computer — a major milestone in making error-corrected quantum computing practical. Progress is accelerating.

PART 4

What Will They Actually Do?

A quantum computer will not replace your laptop. It will not make streaming movies faster or improve your spreadsheets. They are specialized tools for specific, highly complex problems. Here are the three areas where they will make the biggest impact.

Area	The Problem Today	How Quantum Helps
■ Medicine	Simulating molecules is too complex for regular computers	Model drug-protein interactions with atomic precision
■ Climate	Designing better batteries and solar materials is slow	Simulate chemical reactions to find greener materials faster
■ Security	Future quantum computers could break today's encryption	Post-quantum security upgrades are already being deployed

Medicine and Drug Discovery

Drugs work by attaching to proteins in the body. Proteins are complex molecules, and molecules follow quantum rules. Today's computers struggle to simulate large molecules accurately. A powerful quantum computer could simulate exactly how a new drug interacts with a disease — potentially saving years of laboratory trial-and-error and accelerating cures for diseases like Alzheimer's or cancer.

Climate and Clean Energy

Many of our biggest climate challenges — building better batteries, creating more efficient solar panels, or finding cleaner ways to make fertilizer — depend on understanding chemical reactions at the atomic level. Quantum computers could act as virtual chemistry labs, helping scientists discover greener materials much faster than traditional research allows.

Cybersecurity: The Double-Edged Sword

A large, future quantum computer could break the encryption that currently protects our bank accounts, emails, and internet traffic. This is a serious concern — but the cybersecurity industry is already preparing. Companies and governments are currently upgrading to **post-quantum security**: new digital locks designed to be safe against both regular and quantum computers. In 2026, companies like QuSecure and Anchorage Digital are actively deploying these upgrades.

CONCLUSION

The Journey Ahead

We are currently in the early days of the quantum era. Today's machines are like the very first airplanes: they prove that something amazing is possible, but they are not yet ready to carry millions of passengers.

Over the next few years, you will see headlines about more qubits, lower error rates, and new partnerships between quantum companies and industries. The technology is moving fast, with billions of dollars invested by governments and tech giants worldwide. The race is genuinely global — with the United States, China, Europe, Canada, Australia, and Israel all competing to lead.

By reading **The Quantum Journal**, you are already ahead of the curve. You don't need to be a physicist to understand the future — you just need to know where to look.

What to watch for next:

- *Fault-tolerant logical qubits becoming a reality*
- *First quantum advantage on a real-world business problem*
- *Post-quantum security becoming the new internet standard*
- *Quantum sensors entering medicine and navigation*
- *A quantum internet connecting cities worldwide*

Stay Ahead of the Quantum Revolution

Visit TheQuantumJournal.com every day for fresh quantum computing news, research breakthroughs, and industry updates — all explained in plain English.

thequantumjournal.com

From the Amazon #1 Best Selling Author (ModernMillions.ai), R. Kenner French