RAM, assemble!

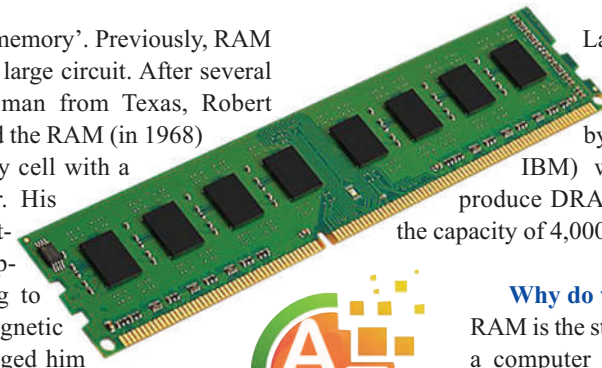
From the crack of dawn, technology stirs us with its reliable alarms, and caresses us with the cooling breeze of our ACs as we drift off to sleep, weaving its wonders into our everyday lives. GT pays homage to this silent saviour that simplifies and enhances our existence with a brand-new series, unwrapping A to Z of iconic tech pieces, one letter at a time. Here's presenting the R in this series that changed human life as we know and live it.

Tvisha Kashyap, AIS PV, VII A

The tech: RAM/ Random-Access Memory
The inventor: Robert Dennard

How was it invented?

The Williams tube, invented by the eponymous inventor in 1947, was RAM in its earliest form. It was developed to produce 'magnetic-core memory'. Previously, RAM was a copiously large circuit. After several experiments, a man from Texas, Robert Dennard reduced the RAM (in 1968) to just a memory cell with a single transistor. His unnamed competitor's simple approach of trying to extend the magnetic memory challenged him to develop the memory in silicon chips. He fused semiconductor technology with extremely small transistors which were etched in silicon. This approach allowed substantial storage in a much simpler and smaller circuit.



A to Z of tech

When did we get to know it first?

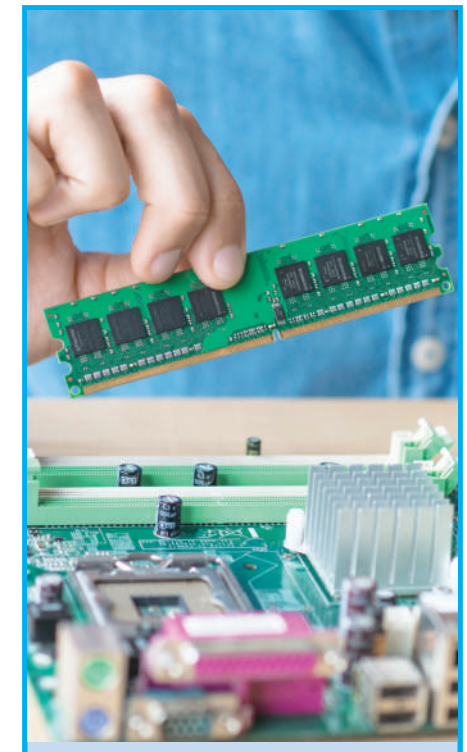
In 1968, Dennard and IBM received the patent for DRAM. It began to be sold commercially in the 1970s when Intel built a three-transistor cell design DRAM chip of 4 kilobits, which became so popular that it obliterated the use of previous RAM designs. Dennard immersed himself in the refinement of RAM, making it low voltage and FET specialised. Following this, came a wave of inventions where the Moore's Law and scaling principles (pioneered by Dennard and IBM) were used to produce DRAM chips with the capacity of 4,000,000,000 bits.

Why do we use it?

RAM is the standard part of a computer used to store and retrieve data. It allows the device to rapidly process information. It helps in loading an application, editing a document or a photo, surfing the internet, etc. It even saves your progress in video games. The greater RAM'S memory density, the faster one can operate various applications and websites on the internet and digital devices.

How has it helped our lives?

RAM has made browsing on internet swifter and processing of applications easier. One can download heavy files like a movie and edit lengthy YouTube videos on storage-based applications like Lightroom and Davinci Resolve because of RAM. It has also aided the invention of plethora of gadgets, from laptops and mobile phones to music players, gaming consoles, and digital cameras, to name a few. GT



Fun fact: RAM was first called Dynamic Random-Access Memory. It is named so because it can access any storage location directly.

News tonight with Mr Brain

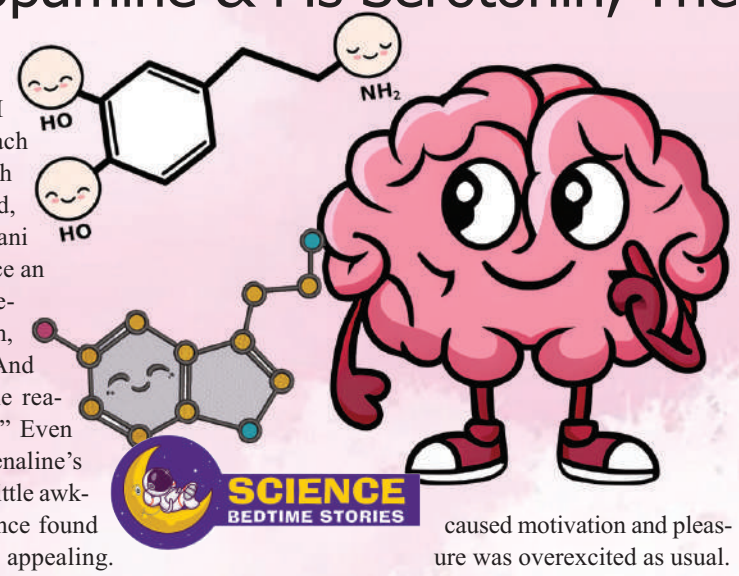
Ft Mr Adrenaline, Mrs Dopamine & Ms Serotonin, The Chemical Trifecta

Pooja Chandna, AIS Saket, Alumna

Her heart was beating fast when the teacher called out Suhani's name. She was afraid to see her test results. But after seeing her mark sheet, she grinned. A perfect score! She wanted to celebrate with her family, unaware of a similar celebration transpiring within her body. Every cell in her body was anticipating the special segment of their daily newscaster Mr Brain, who dramatically welcomed everyone, "Hello and welcome to News tonight with Mr Brain."

"Today, we celebrate our dear human, Suhani's success, and thus we have welcomed hormones responsible for this." The cells applauded as Ms Serotonin, Mrs Dopamine and Mr Adrenaline were welcomed.

"Distinguished guests, we appreciate your presence." Adrenaline nervously nodded, Dopamine gave Mr Brain a hug, while Serotonin simply smiled. "Let's begin with Mr Adrenaline. Please recount your role in today's success," Mr Brain continued. Adrenaline replied, "Uh yeah, so, ahem, on the day of the exam, umm, all I did was approach my target with lightning speed, so that Suhani would experience an appropriate degree of, umm, nervousness. And maybe I was the reason she topped." Even though Mr Adrenaline's response was a little awkward, the audience found his anxiousness appealing.



After all, it wasn't easy to assist the body to respond effectively to thrilling situations. "Very well, now Ms Dopamine if you-" but she interrupted him and said, "Ah yes, it's a real pleasure to be here. We accomplished this task together, and I am incredibly proud of us. I caused Suhani's joyful reactions to answer questions correctly. Naturally, it was the happiness boost that kept her on track during the exam." The hormone that caused motivation and pleasure was overexcited as usual.

Finally, Mr Brain squeaked, "Ms Serotonin, what would you like to say?" "As a mood regulator, I helped our human come out of her slump and gave her self-assurance. Remember, having confidence is the key." The spectators were drawn to her response. She was a crowd favourite. What's not there to appreciate about a neurotransmitter functioning non-stop to keep the person emotionally stable, joyful and calm?

"Very true. Sadly, we must conclude now, as we have already gone above the time limit, due to particularly enthusiastic participation by our guests today. Thanks for watchi-" Before he could finish, Ms Dopamine seized the microphone and continued, "Yes, yes, thank you so much for watching. I am feeling euphoric." Everyone sighed in unison, "Oh no. It'll be one long night."

(Pooja is currently pursuing BA (Prog) from Maitreyi College, DU.)

The science of it

Dopamine and serotonin are neurotransmitters that help control a variety of biological processes. Movement, coordination, and experiences of pleasure and reward depend on dopamine. Serotonin influences emotions, digestion, and metabolism. While adrenaline, prepares the body for 'fight or flight'.