PEAK Class 101:
A "memory" Story

Without a doubt, computer memory plays a vital role in the PC industry. From the SRAM memory of the early days to today's lighting-fast DDR3 system memory, random access memory (RAM) has come a long way to become a key factor in any computer system sold around the world. Powered by tiny electronic currents, RAM serves as a temporary/permanent storage medium that makes data retrieval easy and convenient.

What is RAM?

RAM, or random access memory, is a type of microchip used for computer data storage. Simply put, it serves as a temporary/permanent storage that allows the data to be accessed in no particular order (random). Data are stored in RAM by special addresses. Every time you start your operating system, request certain files, or browse the Internet, the relevant program is loaded into the computer's RAM by electronic current. Imagine that RAM is your desktop; the more RAM you have, the bigger your desk will be. A bigger desk will enable you to work on multiple jobs (or programs) at the same time.

Different types of RAM

RAM comes in different flavours: SRAM, DRAM, SDRAM, and DDR-SDRAM, to name just a few. We will focus on DDR-SDRAM as it represents the latest in the RAM industry. The speed at which the RAM can be accessed by the computer's CPU (central processor unit) is critical for the performance of the PC; if the RAM is too slow, the CPU has to wait for it to deliver data.

DDR

DDR, or double data rate RAM, transfers data on both the rising and falling edges of the motherboard's clock cycle. It doubles the amount of data that can be transferred to or from the RAM in a given length of time. DDR quickly evolved to DDR2, which is not the mainstream memory type that dominates the market. It delivers a better performance at a competitive price. As you might expect, DDR3 is already out on the market. However, the higher speed comes at a premium price.

GDDR

GDDR, or graphics double data rate, is a special kind of DDR RAM used exclusively on graphics cards. Generally speaking, GDDR has better (shorter) access time compared with DDR, enabling the screen display to be updated more rapidly. GDDR2/3 are now commonly used in modern graphic cards and some tablet PCs. The latest type of GDDR is GDDR5, which is the standard memory on the ATI Radeon HD4870 graphics card shown above.

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