QUESTION 01:

Double Data Rate (DDR) is a type of synchronous dynamic random-access memory (SDRAM) that has the capability to transfer data at twice the rate of earlier versions of SDRAM. The technology used in DDR memory involves making use of both the rising and falling edges of the clock signal to carry out data transfer, which ultimately leads to the transfer of data at twice the speed of the memory's actual clock speed. There are different versions of DDR memory available in the market, each having its own transfer rate and specifications. DDR memory has evolved as the industry standard due to its advanced performance over previous SDRAM versions. It has found its place in various electronic devices ranging from personal computers, servers, gaming systems, to mobile devices. By facilitating faster and more efficient data processing, DDR memory has emerged as a crucial component in modern computing systems. In conclusion, DDR memory has significantly transformed the data transfer speed to enhance system performance.

QUESTION 02:

Cache is a quick memory that acts as a buffer between the central processing unit (CPU) and the main memory. It stores frequently accessed data and instructions from the main memory to speed up their access time. This helps the CPU to get the data from the cache faster instead of waiting for them to load from the main memory, thus improving the system's performance. We use cache to enhance the computer's performance and reduce data traffic on the system bus.

Modern computers usually have three levels of cache. The first one, L1, is the fastest but the smallest and is generally integrated into the processor itself. The second level, L2, is slower and larger and usually located on the processor's motherboard. The largest cache, L3, is the slowest, but it is typically shared between multiple processor cores. In some high-performance systems, there may be additional levels of cache.