RAM (RANDOM ACCESS MEMORY)

INTRODUCTION

RAM is acronym used for Random Access Memory. Virtually all the computers now or then depend on memory to perform all its functions. Without RAM it becomes impossible to get very far, from the moment the PC is turned ON. The software applications installed on the computer depends largely on the RAM. It is responsible for holding the data while any application is running. Once the application is closed without saving, the data gets lost.

Structure of RAM

DIFFERENCE BETWEEN RAM AND SAM

RAM is considered "random access" because access to any memory cell can be done directly if the intersection of row and column is well known. The opposite of RAM is Serial Access Memory (SAM). SAM stores data as a series of memory cells that can only be accessed sequentially. If the data is not at the current location, each memory cell is checked until the needed data is found. RAM data on the other hand can be accessed in any order.

STRUCTURE AND ITS INSTALLATION

The RAM comes in the form of IC chips often called modules or sticks. They can be plugged directly into the computer's motherboard. If more programs and processes needs to run at the same time then the demand of RAM increases. It is used to store the data that the processor needs to access quickly in order to carry out applications and system processes.

Installation of RAM on motherboard

In most common form of computer memory, in Dynamic Random Access Memory (DRAM) many tiny capacitors and transistors are paired to create a memory cell. The capacitor holds the bit information in the form of binary codes i.e. 0's and 1's. The transistor acts as a switch that lets the control circuitry on the memory chip to read the capacitor and change its state.

DESCRIPTION LABEL

Tag defining the type of RAM

Can be seen from the label, the product number "KVR800D2N6/2G-SP ", on behalf of the memory capacity of a single 2GB and the speed rating of DDR2-800 (equivalent in the PC2-6400), means 200MHz of core RAM clock speed, 400MHz of DDR I/O speed with the default voltage of 1.8V, 240 PINS in golden colour, CL delay is 6 and packaged in China. With the help of this description it can be easily known which RAM is suitable for which motherboard. The pins are of golden colour which gets stuck in the motherboard to make connections with it. The pins may be either tin or gold plated. Gold plated are recommended because they don't get corroded.

RAM MEMORY NOTCH IDENTIFICATION

Location of notch in DDR2 module

The computer and RAM both can get damaged if right kind of memory is not used. Different types of RAM have notches at different positions to prevent the user from inserting the RAM of wrong type. The DDR2 module used here has 240 pins with a notch situated 2.78 inches from one edge. It is used to differentiate it from other modules like DDR3, SDR-DIMM, and DDR-DIMMs etc. The DDR3 have notch at 2.15 inches from the edge, SDR-DIMMs have 168 pins, 2 notches on the bottom edge and one notch on each side and DDR-DIMMs have 184 pins, two notches on each side and one notch on the bottom edge located 2.89 inches from one end.

CUT ON BOTH SIDES

Semicircular cut on both sides

The semi-circular cut on both sides of the RAM cards are used to put the RAM cards onto correct position on the motherboard. These cuts get fixed into the clips on the motherboard and keep the RAM in position. The module should slide into place so that the clips can fasten in to the cut outs on either side.

THE RAM CHIPS

RAM module

The modules are built using chips where each contains a number of megabits. These chips are made up of EEPROM. And since each byte needs 8 bits, more than one chip is needed to make a module. The 8 square boxes seen in the figure are the actual RAM chips. For a 4 GB module there will be 8 boxes of 512MB and for 2 GB module there can be 8 boxes of 256MB or 4 boxes of 512MB each. Here in this case 8 boxes of 256MB are used as RAM chips. Each chip set make connection with the motherboard and ultimately with the CPU with the help of pins.

Source : http://www.udaipurtalents.com/technical-learning/ram-random-access-memory