1.2 MEMORY

**RAM – RANDOM ACCESS MEMORY**: The PURPOSE of RAM is to process the instructions & programs that are CURRENTLY in use by the computer system.

**ROM – READ ONLY MEMORY**: The PURPOSE of ROM is to store the BIOS, which contains the boot strap instructions used to boot up (start) the PC.

**Volatile Memory** – this is a type of memory that is temporary – all data stored in here is LOST when the computer is turned off. E.g. RAM, CACHE, Virtual memory.

**Non Volatile Memory** – is a permanent type of memory – data still remains here when the computer is turned off. E.g. ROM.

**Firmware** – this is permanent software that cannot be changed. – e.g. the BIOS is firmware on the ROM as this contains the instructions to start up the PC.

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**RAM Vs ROM**

<table>
<thead>
<tr>
<th>RAM</th>
<th>ROM</th>
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</thead>
<tbody>
<tr>
<td>RAM is Volatile</td>
<td>ROM - Non Volatile</td>
</tr>
<tr>
<td>RAM Stores data &amp; Programs currently in use</td>
<td>ROM – stores the BIOS used to start up the PC</td>
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<tr>
<td>RAM is larger than ROM</td>
<td>ROM is smaller than RAM</td>
</tr>
<tr>
<td>Data can be changed</td>
<td>data on here cannot be changed</td>
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**Why do we need Virtual Memory?**

VM is created when RAM has insufficient space. The hard Drive will create a temporary memory (virtual Memory) to store instructions waiting to be fetched by RAM.

Data will be sent back and forth between RAM and VM (known as Disk thrashing, paging or swapping) until RAM has enough space to be able to deal with the data.

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**Flash Memory**

This is an electronic re-programmable form of memory. Data here can be erased and re-written. Flash memory is often used for long term storage devices. E.g. SD cards, USB sticks.