COMPUTER SYSTEM

LAB 04

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1.

1.1
- ROM, or read-only memory, is a category of computer storage that holds non-volatile, permanent data and is typically only readable, not writeable. The software that enables a computer to boot up or regenerate each time it is turned on is stored in the ROM.

1.2
- RAM is random access memory, it is short term memory where data is stored as the processor needs it.
- Computers use RAM to store files that are currently open and in use. 4 to 8 MB of storage are typical for ROM chips. RAM chips frequently have storage capacities between 1 and 256 GB. Depending on their application, ROM can range in size from less than an inch long to many inches long and wide.

1.3
- Information is stored in static RAM until the power is turned off. It is quite quick, but because it needs to be powered constantly, its power consumption is fairly significant. Unlike dynamic RAM, which is not always powered, this type of RAM uses less power. Compared to static RAM, dynamic RAM is slower.

1.4
- The memory is flash. Data from flash memory is partially corrupted each time it is accessed. Flash memories have a limited lifespan, thus it would be foolish to use them to store sensitive data because eventually they would stop working.

2.
- 1024 x 1000000 = 1,024,000,000 bits

3.
- The Von Neumann architecture stores both programme and instruction data in the same memory. Harvard architecture: where separate buses and storage are used for data and instruction. It was created in order to get over the limitations of von Neumann architecture. Von Neumann architecture employs the same physical memory address for both instructions and data, whereas Harvard architecture uses a different physical memory address. Harvard can complete an instruction in a single clock cycle, but Von Neumann needs two. Harvard architecture is more expensive.

4.
- Cache memory, often known as cache, is an additional memory system that short-term stores frequently used data and instructions for the central processing unit (CPU) of a computer to process more quickly.

5.
Interrupt is a hardware mechanism in which, the device notices the CPU that it requires attention. An interrupt can occur at any time.

Common types of interrupts: Clock – a countdown timer which issues an INT each time it gets to 0.

6.
- The two basic actions of a stack are Push, which adds an element to the collection, and. A stack is an abstract data type that acts as a collection of elements. Pop, which eliminates the most recent ingredient to be added that has not yet been eliminated.

6.1
- When managing an interrupt, the operating system cannot use user-accessible memory because the interrupt-handling application can be flawed, malicious, or worse. Any area of its address space may be overwritten at any time. The stack is included in that.

6.2
- It is useful because it may be used to keep track of operations for a software program's undo feature, which first undoes the most recent activity.