1.

1.1 - ROM stands for Read Only Memory and is type of memory that stores Non-Volatile permanent data that can only be read and not be written over. ROM stores the code that helps a computer to turn on or re-generate every time it turns on.

1.2 - RAM stands for Random Access Memory and is a type of memory that stores data on a short-term basis unlike ROM which store data permanently. The Data can be accessed and changed with having to change the whole memory.

1.3 - The difference between static ram and dynamic ram is static ram holds information until power is supplied and has better performance and lower power usage while dynamic ram that needs to be continuously refreshed to store data.

1.4 - In a USB thumb drive, flash memory is commonly used to store data. We should rely on as data loss can occur from bit leaking which is caused by prolonged lack of electrical power and controller failures due to the flash memory being manufactured poorly.

2. 11 bits are needed for addressing all bytes in the computers 1 GB of ram.

3. Von Neumann Architecture has Instruction Set Architecture that consists of 3 basic units such as the CPU, the main memory unit, and the Input/Output device. It allows process with higher priority tasks to be executed while interrupting other tasks before allowed them to resume and be processed in a two-clock cycle to execute a single instruction. However, In Harvard Architecture is a digital computer architecture which uses separate storages and separate buses for instructions and data to be processed and executed in a single cycle.

4. Cache Memory is a form of memory that performs very high-speed as it acts as a buffer between RAM and the CPU as it holds frequently used data and instructions to be immediately available to be used by the CPU when needed.

5. An Interrupt is a signal that is emitted by a hardware or a software when a process is needed immediate attention. Common types of interrupts are count-down timers, keyboards and mouses, errors and networks where a packet is being received by the NIC.

5.1 – Polling is a protocol where the CPU checks whether a device needs attention. Polling process unit keeps sending signals to I/O devices on whether it desires any CPU processing. It is not commonly used as it wastes countless processor cycles as it repeatedly checks each device.

6. Stacks allow data to be pushed to the top of a stack of tasks to be performed and to pop stored data out of the stack. This allows for a simple and efficient storage solution to recalling of data by reducing the need of storing memory addresses.

6.1 -

6.2 – Stacks is a useful data structure in programming as it allows to implement functions that can be helpful in nested structures and functions that call upon other functions.

Practical – Stacks of Stacks

Left / Right

Input

Left / Right

Input

clock

reset

stack toggle

reset