Flash cards

If you want to see the cards definition then term look at the slides from reverse

Memory

Logic Gates

A collection of transistors assembled to assign certain patterns of 1s and 0s into predictable outputs. Common examples include and gates which only give a 1 as output when all input terminals are one.

Sequential Memory

Memory that involves having an input fed into the output of your gate. Doing this allows your computer to “remember” the output. This is used to build latches and flip flops.

Latch

The most simplistic implementation of sequential logic. Due to its simplicity latches have difficulty with their timing in relation to other components.

Flip Flops

A more complex implementation of a latch that uses additional hardware in order to fix the problem of timing that latches have.

Registers

A collection of latches or flip flops that are put side by side. Registers are put in close proximity to all notable computer components. Registers are the most used memory element in a computer.

Register File

A collection of registers put in an array. One implementation is a 8x4 register file. They are primarily used to reduce the power cost of registers as they are REALLY power inefficient.

Memory Array

A collection of memory elements put into a grid. They can be used from anything from ssds to registers.

RAM

Means random access memory. It is used to load programs into a place where the cpu can use it.

The name is outdated.

ROM

The meaning is Read only memory. It is commonly used in firmware such as BIOS.

The name is outdated.

Stack Memory

A portion of RAM is reserved for this data structure. It has a LIFO (last in first out) structure and is commonly used to save and reset registers for function calls in asm.

Memory

OS/CPU

Operating system

The program that oversees the running of your computer. It runs until you power off your computer.

Process

Parts of a programs that are being used by OSs.

Process Sections

Parts of processes that are separating it. Common ones are the stack, heap, code, and data.

Process pages

Separations of a process so that it can be split onto a limited space on RAM.

Process lifecycle

How the process is handled by the OS. A 4 stage one includes new, ready, blocked, and terminated.

Process scheduling

How an OS decides which process to run.

System interrupts

A jump used to take control of an program in order to perform a certain function.

kernel/user mode

User mode is the part of the OS is “facing” the user it implements security functionality so that a user cannot inject malware or cause a huge bug.

Kernel mode is the part of the OS that holds all of the essential functionality of the OS.

Cpu instruction cycle

The steps that the cpu takes where it first fetches, decodes and executes a program until it stops running.

threads

An instance of a process in the same address space as another process. It has the same access to the data section.

CPU/OS

GPU

Integrated/stand-alone gpus

Gpus that are connected to the cpu. (Integrated graphics)

Gpus that are connected to the cpu via a wire or something similar.

Warps

Gpus schedule themselves with these. They are a collection of threads.

Gpu instruction cycle

The gpu fetches the same as a cpu. It decodes using simt(single input multiple thread) and executes with simd (single input multiple data).

SIMT

Means single input multiple thread.

A single file is given to the gpu and multiple threads run the file.

SIMT

The results of the threads is given to vector registers that takes multiple inputs and computes it for all of them in one run of the execute stage.

Caches

A part of a computer that stores notable instructions close to the notable hardware.

Banking

In order to optimize the access of registers for threads they are stacked on top of each other and made so that they can be accessed simultaneously.

Operand collector

A hardware component that optimizes the order in which banks are accessed and written to.

GPU