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Project 1

Operating system

Module 1

Module 1 is a CPU emulated by a program counter (PC) accumulator (ACC) and instruction register(IR). The program takes instructions from the memory and executes a structure to perform operations, LOAD, ADD, SUB, STORE, HALT. The ACC holds the values from memory then prints the value more then once to show change over time.

Module 2

Module two has two levels of caches 1 and 2. The Readmemory function retrieves data from memory this including Ram and the two caches. WriteMemory function has data written to memory storing said data in level 1 cache for addresses within its parameters. This is a self-made simple example of memory system.

Module 3

Module 3 has the operations ADD\_OP and SUB OP LOAD\_OP and STORE\_OP then executeInstruction functions takes these previous opcodes and performs the correct operations respective to their function. Also, error message is produced if unrecognized error is encountered.

Module 4

Module 4 is an interrupter for the CPU a interrupt flag is used to start an interrupt. Checkforinterrupt function checks for the interrupt setting it if needed interruptHandler() function is called this function also handles the interrupt itself.

Module 5

Module 5 is the direct memory access or DMA, transfers data between memory and Input/output without the use of the CPU. The DmaTransfer function does the transfer itself. The initiateDMA function starts this.