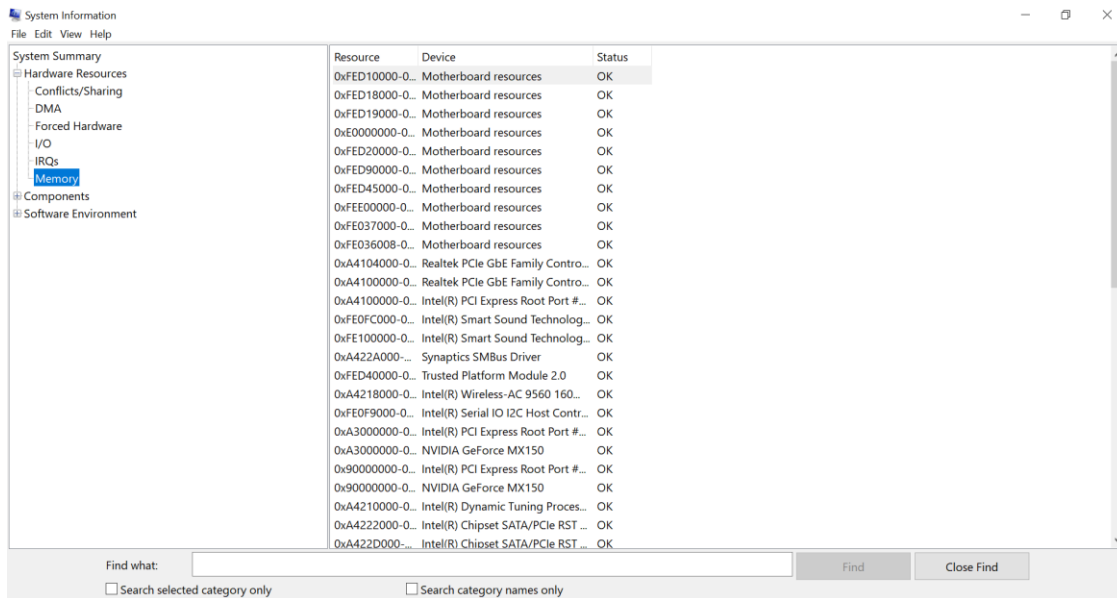


Computer Architecture and Organization

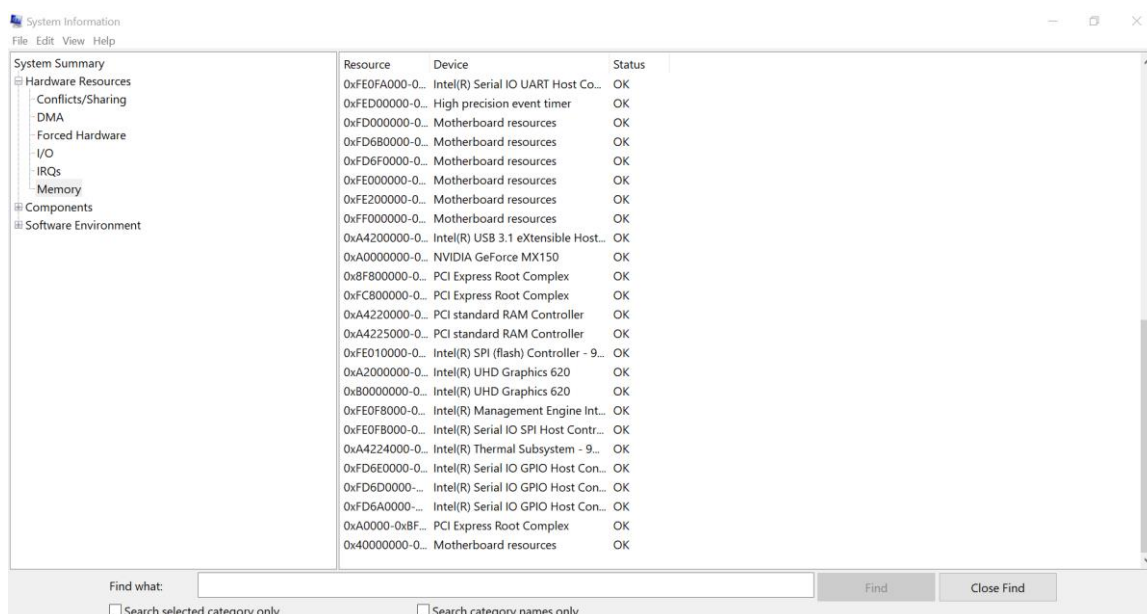
Prashanth.S(19MID0020)

Memory organization details

The allotted range of physical address of specific functions of my System is displayed below. The “0x” in the beginning of every address symbolises that it is in Hexadecimal format. Totally there are 8 digits in each Hexadecimal address. i.e. it’s 32-bit address



Resource	Device	Status
0xFED10000-0...	Motherboard resources	OK
0xFED18000-0...	Motherboard resources	OK
0xFED19000-0...	Motherboard resources	OK
0xE0000000-0...	Motherboard resources	OK
0xFED20000-0...	Motherboard resources	OK
0xFED90000-0...	Motherboard resources	OK
0xFED45000-0...	Motherboard resources	OK
0xFEE00000-0...	Motherboard resources	OK
0xFE037000-0...	Motherboard resources	OK
0xFE036008-0...	Motherboard resources	OK
0xA4104000-0...	Realtek PCIe GbE Family Contro...	OK
0xA4100000-0...	Realtek PCIe GbE Family Contro...	OK
0xA4100000-0...	Intel(R) PCI Express Root Port #...	OK
0xFE0FC000-0...	Intel(R) Smart Sound Technolog...	OK
0xFE100000-0...	Intel(R) Smart Sound Technolog...	OK
0xA422A000-...	Synaptics SMBus Driver	OK
0xFED40000-0...	Trusted Platform Module 2.0	OK
0xA4218000-0...	Intel(R) Wireless-AC 9560 160...	OK
0xFE0F9000-0...	Intel(R) Serial IO I2C Host Contr...	OK
0xA3000000-0...	Intel(R) PCI Express Root Port #...	OK
0xA3000000-0...	NVIDIA GeForce MX150	OK
0x90000000-0...	Intel(R) PCI Express Root Port #...	OK
0x90000000-0...	NVIDIA GeForce MX150	OK
0xA4210000-0...	Intel(R) Dynamic Tuning Proces...	OK
0xA4222000-0...	Intel(R) Chipset SATA/PCIe RST ...	OK
0xA422D000-...	Intel(R) Chioset SATA/PCIe RST ...	OK

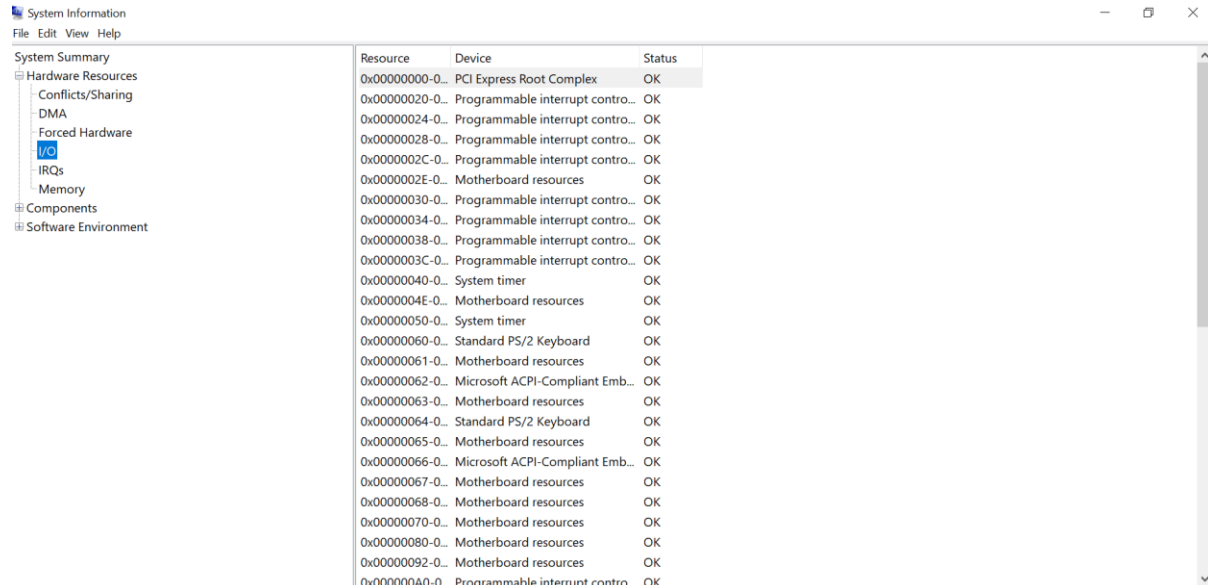


Resource	Device	Status
0xFE0FA000-0...	Intel(R) Serial IO UART Host Co...	OK
0xFED00000-0...	High precision event timer	OK
0xFD000000-0...	Motherboard resources	OK
0xFD680000-0...	Motherboard resources	OK
0xFD6F0000-0...	Motherboard resources	OK
0xFE000000-0...	Motherboard resources	OK
0xFE200000-0...	Motherboard resources	OK
0xFF000000-0...	Motherboard resources	OK
0xA4200000-0...	Intel(R) USB 3.1 eXtensible Host...	OK
0xA0000000-0...	NVIDIA GeForce MX150	OK
0x8F800000-0...	PCI Express Root Complex	OK
0xFC800000-0...	PCI Express Root Complex	OK
0xA4220000-0...	PCI standard RAM Controller	OK
0xA4225000-0...	PCI standard RAM Controller	OK
0xFE010000-0...	Intel(R) SPI (flash) Controller - 9...	OK
0xA2000000-0...	Intel(R) UHD Graphics 620	OK
0x80000000-0...	Intel(R) UHD Graphics 620	OK
0xFE0F8000-0...	Intel(R) Management Engine Int...	OK
0xFE0FB000-0...	Intel(R) Serial IO SPI Host Contr...	OK
0xA4224000-0...	Intel(R) Thermal Subsystem - 9...	OK
0xFD6E0000-0...	Intel(R) Serial IO GPIO Host Con...	OK
0xFD6D0000-0...	Intel(R) Serial IO GPIO Host Con...	OK
0xFD6A0000-...	Intel(R) Serial IO GPIO Host Con...	OK
0xA0000-0x8F...	PCI Express Root Complex	OK
0x40000000-0...	Motherboard resources	OK

I/O interface

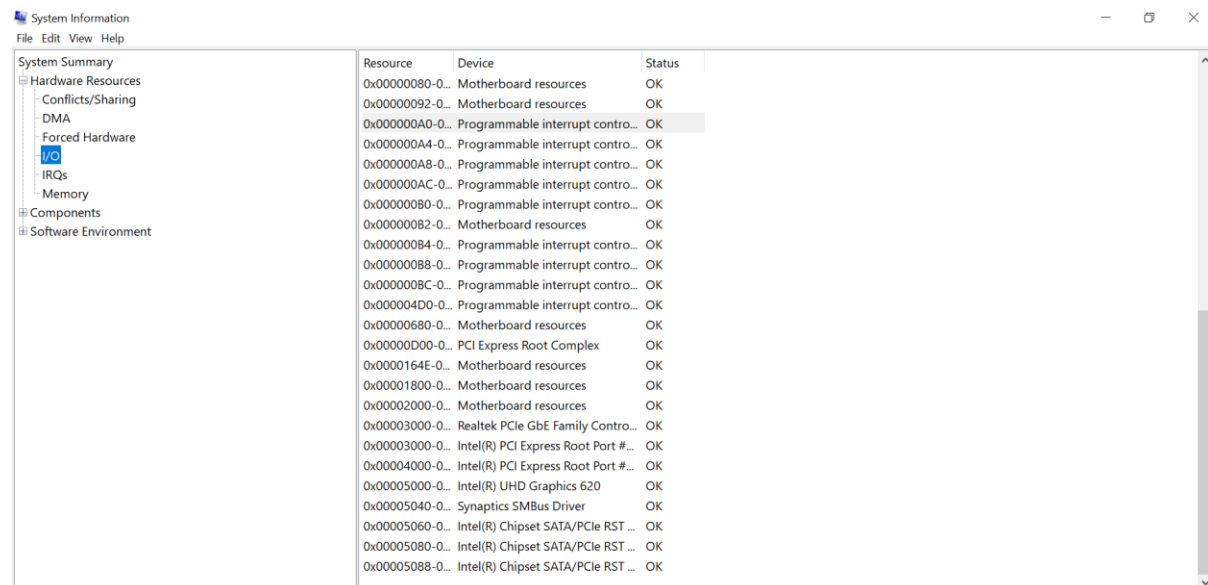
Processor → i5 8th gen

System → Hp Pavilion 14 ce1001tx



The screenshot shows the Windows System Information window with the 'I/O' section expanded in the left-hand tree. The main pane displays a table of I/O resources, including PCI Express Root Complex, Programmable interrupt controllers, and Motherboard resources, all with a status of 'OK'.

Resource	Device	Status
0x00000000-0...	PCI Express Root Complex	OK
0x00000020-0...	Programmable interrupt contro...	OK
0x00000024-0...	Programmable interrupt contro...	OK
0x00000028-0...	Programmable interrupt contro...	OK
0x0000002C-0...	Programmable interrupt contro...	OK
0x0000002E-0...	Motherboard resources	OK
0x00000030-0...	Programmable interrupt contro...	OK
0x00000034-0...	Programmable interrupt contro...	OK
0x00000038-0...	Programmable interrupt contro...	OK
0x0000003C-0...	Programmable interrupt contro...	OK
0x00000040-0...	System timer	OK
0x0000004E-0...	Motherboard resources	OK
0x00000050-0...	System timer	OK
0x00000060-0...	Standard PS/2 Keyboard	OK
0x00000061-0...	Motherboard resources	OK
0x00000062-0...	Microsoft ACPI-Compliant Emb...	OK
0x00000063-0...	Motherboard resources	OK
0x00000064-0...	Standard PS/2 Keyboard	OK
0x00000065-0...	Motherboard resources	OK
0x00000066-0...	Microsoft ACPI-Compliant Emb...	OK
0x00000067-0...	Motherboard resources	OK
0x00000068-0...	Motherboard resources	OK
0x00000070-0...	Motherboard resources	OK
0x00000080-0...	Motherboard resources	OK
0x00000092-0...	Motherboard resources	OK
0x000000A0-0...	Programmable interrupt contro...	OK



The screenshot shows the Windows System Information window with the 'I/O' section expanded in the left-hand tree. The main pane displays a table of I/O resources, including Motherboard resources, Programmable interrupt controllers, and various PCI Express Root Complex and Intel components, all with a status of 'OK'.

Resource	Device	Status
0x00000080-0...	Motherboard resources	OK
0x00000092-0...	Motherboard resources	OK
0x000000A0-0...	Programmable interrupt contro...	OK
0x000000A4-0...	Programmable interrupt contro...	OK
0x000000A8-0...	Programmable interrupt contro...	OK
0x000000AC-0...	Programmable interrupt contro...	OK
0x000000B0-0...	Programmable interrupt contro...	OK
0x000000B2-0...	Motherboard resources	OK
0x000000B4-0...	Programmable interrupt contro...	OK
0x000000B8-0...	Programmable interrupt contro...	OK
0x000000BC-0...	Programmable interrupt contro...	OK
0x000000D0-0...	Programmable interrupt contro...	OK
0x00000068-0...	Motherboard resources	OK
0x000000D0-0...	PCI Express Root Complex	OK
0x0000164E-0...	Motherboard resources	OK
0x00001800-0...	Motherboard resources	OK
0x00002000-0...	Motherboard resources	OK
0x00003000-0...	Realtek PCIe GbE Family Contro...	OK
0x00003000-0...	Intel(R) PCI Express Root Port #...	OK
0x00004000-0...	Intel(R) PCI Express Root Port #...	OK
0x00005000-0...	Intel(R) UHD Graphics 620	OK
0x00005040-0...	Synaptics SMBus Driver	OK
0x00005060-0...	Intel(R) Chipset SATA/PCIe RST ...	OK
0x00005080-0...	Intel(R) Chipset SATA/PCIe RST ...	OK
0x00005088-0...	Intel(R) Chipset SATA/PCIe RST ...	OK

Conflicts and Sharing Memory

System Information	
File Edit View Help	
System Summary	
Hardware Resources	
Conflicts/Sharing	
DMA	
Forced Hardware	
I/O	
IRQs	
Memory	
Components	
Software Environment	
Resource	Device
Memory Address 0xA410...	Realtek PCIe GbE Family Controller
Memory Address 0xA410...	Intel(R) PCI Express Root Port #10 - 9DB1
I/O Port 0x00003000-0x0...	Realtek PCIe GbE Family Controller
I/O Port 0x00003000-0x0...	Intel(R) PCI Express Root Port #10 - 9DB1
Memory Address 0x90000...	Intel(R) PCI Express Root Port #5 - 9DBC
Memory Address 0x90000...	NVIDIA GeForce MX150
Memory Address 0xA300...	Intel(R) PCI Express Root Port #5 - 9DBC
Memory Address 0xA300...	NVIDIA GeForce MX150
IRQ 16	Synaptics SMBus Driver
IRQ 16	Intel(R) Dynamic Tuning Processor Particip...
IRQ 94	HP Mobile Data Protection Sensor
IRQ 94	Microsoft ACPI-Compliant System

Memory design problem

S.no	Memory	$N \times W$	$N' \times W'$	P	q	$P \times q$	x	y	z	Total
1	RAM	128×8	256×32	2	4	8	7	1	2	10
2	ROM	64×8	128×16	2	2	4	6	1	2	9
3	Interface	256×8	1024×32	4	4	16	8	2	2	12

[illegible]

[illegible]

BIOS → Basic Input/Output System

The Basic Input Output System, or BIOS, is a very small piece of code contained on a chip on your system board. When you start your computer, BIOS is the first software that runs. It identifies your computer's hardware, configures it, tests it, and connects it to the operating system for further instruction. This is called the boot process.

Entering the BIOS setup utility allows you to change the boot process order as well as a wide variety of hardware settings. It is not recommended for an inexperienced user to change settings in the BIOS unless they are being instructed to do so by a trusted source.

Over time, limitations in BIOS led to the creation of a new firmware interface called Unified Extensible Firmware Interface, or UEFI. UEFI is very similar to BIOS, but has some advantages. It can boot from disks over 2-TB in size, has a graphical user interface with network capability, and is backward and forward compatible. UEFI is expected to eventually replace BIOS.

OnePlus

